DOCUMENT RESUME

ED 409 894 IR 018 520

AUTHOR	Heaviside, Sheila; Farris, Elizabeth
TITLE	Advanced Telecommunications in U.S. Private Schools, K-12: Fall 1995. Statistical Analysis Report.
INSTITUTION	Westat, Inc., Rockville, MD.
SPONS AGENCY	National Center for Education Statistics (ED), Washington, DC.
REPORT NO	NCES-97-394; ISBN-0-16-049114-2
PUB DATE	Jun 97
NOTE	86p.
AVAILABLE FROM	U.S. Government Printing Office, Superintendent of Documents, Mail Stop: SSOP, Washington, DC 20402-9328.
PUB TYPE	Numerical/Quantitative Data (110) -- Reports - Descriptive (141) -- Tests/Questionnaires (160)
EDRS PRICE	MF01/PC04 Plus Postage.
DESCRIPTORS	*Access to Information; Educational Equipment; *Educational Technology; *Elementary Secondary Education; *Internet; *Private Schools; Statistical Data; Tables (Data); *Telecommunications
IDENTIFIERS	Connectivity

ABSTRACT

This document provides data from a nationally representative sample of private elementary, secondary, and combined schools in the United States and District of Columbia in the fall 1995. Twenty-five percent of private schools had access to the Internet. By comparison, 50% of public schools were on the Internet. Access to the Internet varied by instructional level of the school and size of enrollment; 57% of private secondary schools had Internet access compared with 23% of elementary schools and 19% of schools combining elementary and secondary grades. Almost all private schools (95%) were equipped with computers. On average, there were 24 computers per private school and an average of 9 private school students per computer. Nonsectarian schools reported fewer students per computer (6) than Catholic schools (10) and other religious schools. Nine percent of all the computers in private schools had Internet access and there were 99 students for every computer with Internet access. The percent of computers on the Internet in nonsectarian private schools was almost four times higher than the percent in schools with religious affiliations. Nonsectarian schools reported the lowest ratio of students per Internet connected computer--25 to 1. The ratio of students per computer with Internet access also varied by instructional level. Five percent of all instructional rooms in private schools had Internet access. Seventy-three percent of private schools provided access in one or more instructional rooms. Nonsectarian schools were more likely than Catholic schools to provide classroom access to the Internet. Of private schools with Internet access, 94% had e-mail, 72% had World Wide Web access, 69% had access to newsgroups, and 67% had search capability services. Ninety-four percent of private schools connected to wide area networks by modem. Teachers and staff had the largest role in developing private schools' advanced telecommunications activities, followed by parents. Fourteen percent of private schools had a full-time network administrator. Four in 10 private schools that did not have Internet access had plans to obtain access in the future. Funding was the most frequently cited barrier to the acquisition or use of advanced telecommunications in private schools. Twenty-one tables

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present statistics and standard errors for tables. The survey instrument is included. (AEF)

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Statistical Analysis Report

June 1997

Advanced Telecommunications in U.S. Private Schools K–12

Fall 1995

IR018320

FRSS
Fast Response Survey System

U.S. Department of Education
Office of Educational Research and Improvement

NCES 97-394

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NATIONAL CENTER FOR EDUCATION STATISTICS

Statistical Analysis Report June 1997

Advanced Telecommunications in U.S. Private Schools, K-12 Fall 1995

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For sale by the U.S. Government Printing Office
Superintendent of Documents, Mail Stop: SSOP, Washington, DC 20402-9328
ISBN 0-16-049114-2

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Suggested Citation
U.S. Department of Education. National Center for Education Statistics. *Advanced Telecommunications in U.S. Private Schools, K-12: Fall 1995*, NCES 97–394, by Sheila Heaviside and Elizabeth Farris. Shelley Burns, Judi Carpenter, and Edith McArthur, Project Officers. Washington, DC: 1997.

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Highlights

Schools with Internet Access

- Twenty-five percent of private schools had access to the Internet in fall 1995. Private schools with Internet access enrolled 41 percent of all private school students (figure 2 and table 11). By comparison, 50 percent of public schools were on the Internet in fall 1995 (table 5).

- Access to the Internet varied by instructional level of the school and size of enrollment. Fifty-seven percent of private secondary schools had Internet access compared with 23 percent of elementary schools and 19 percent of schools combining elementary and secondary grades (table 11). Half of the nation's larger private schools with enrollments of 300 or more had Internet access (50 percent), while 27 percent of those enrolling 150 to 299 students and 13 percent of schools with fewer than 150 students had access to the Internet.

- Catholic and nonsectarian schools were about twice as likely to have Internet access as other religious schools. Thirty-five percent of Catholic schools and 32 percent of nonsectarian schools provided Internet access, compared with 16 percent for other religious schools (table 11).

Computers

- Almost all private schools (95 percent) were equipped with computers in fall 1995 (figure 1). On average, there were 24 computers per private school and an average of 9 private school students per computer in fall 1995 (table 10).

- Nonsectarian schools reported fewer students per computer (6) than Catholic schools (10) and other religious schools (9; table 10). There were 7 students per computer in private secondary schools compared with 9 in private elementary schools.

Computers with Internet Access

- Nine percent of all the computers in private schools had Internet access in fall 1995 (table 11).

- Although private schools provided a computer for every 9 students, there were 99 students for every computer with Internet access in private schools (table 10).

- The percent of computers on the Internet in nonsectarian private schools was almost four times higher than the percent in schools with religious affiliations. While 6 percent of computers in Catholic schools and 5 percent of those in other religious schools

had Internet access, 23 percent of the computers in nonsectarian schools were connected to the Internet (table 11).

- Nonsectarian schools reported the lowest ratio of students per Internet connected computer—25 to 1 (table 10). By comparison, there were 174 students per computer with Internet access in Catholic schools and 171 students per computer with Internet access in other religious schools.

- The ratio of students per computer with Internet access also varied by instructional level ranging from 48 in private combined schools, to 78 in private secondary schools, and to 206 in private elementary schools (table 10).

Instructional Rooms with Internet Access

- During fall 1995, 5 percent of all instructional rooms in private schools had Internet access (table 5). By comparison, 9 percent of public school instructional rooms were on the Internet.

- Seventy-three percent of private schools on the Internet provided access in one or more instructional rooms and 93 percent of public schools on the Internet equipped at least one instructional room with Internet access (table 5).

- Forty-six percent of private schools with Internet access had Internet in 1 instructional room, 16 percent in 2-3 rooms, 3 percent in 4 rooms, and 9 percent reported having Internet access in 5 or more instructional rooms (table 5).

- Nonsectarian schools with Internet access were more likely than Catholic schools to provide classroom access to the Internet. Ninety-one percent of nonsectarian schools with Internet provided it in at least 1 instructional room (table 13). Sixty-five percent of Catholic schools with Internet had access in one or more instructional rooms.

Internet Services

- Of private schools with Internet access in fall 1995, 94 percent had E-mail, 72 percent had World Wide Web access, 69 percent had access to newsgroups, and 67 percent had search capability (resource location) services (table 3).

- Of private schools with access to the World Wide Web, 70 percent made it available to students, 68 percent of private schools with search capability services made them available to students and students could avail themselves of newsgroup services in 55 percent of schools with this type of service

(table 3). Thirty-nine percent of private schools with E-mail provided access for students.

Connections to the Internet

- During fall 1995, 94 percent of private schools on the Internet (25 percent of all private schools) connected to wide area networks by modem. Higher speed connections such as Serial Line Internet Protocol (SLIP) or Point to Point Protocol (PPP) were reported by 16 percent of schools. The most advanced connections such as 56Kb, T1, and Integrated Services Digital Network (ISDN) were rare among private schools, 2 to 3 percent for each (table 16).

Development and Administration of Networks

- During fall 1995, teachers and staff had the largest role in developing private schools' advanced telecommunications activities, followed by parents. Forty-one percent of private schools reported that teachers and staff had a formal role in initiating and planning telecommunications to a large extent and 15 percent indicated that parents played a large role (table 4).

- Fourteen percent of private schools with Internet access had a full-time network administrator (table 17). Private school networks were most frequently managed by a part-time administrator. Fifty-eight percent had a part-time network administrator (typically a full-time employee with part-time network responsibilities) and 28 percent of private schools had no single individual responsible for the network.

Plans and Barriers

- Four in 10 private schools that did not have Internet access in fall 1995 had plans to obtain access in the future (table 18).

- Funding was the most frequently cited barrier to the acquisition or use of advanced telecommunications in private schools. Sixty-one percent considered this a major barrier (table 19). Thirty-eight percent cited lack of equipment or poor equipment as a major barrier, and 36 percent cited too few telecommunications access points in the building as a major barrier. These were among the most frequently cited barriers to the acquisition of advanced telecommunications in schools without Internet access and to upgrading and maximizing telecommunication usage in schools with Internet access in fall 1995 (tables 20 and 21).

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Introduction

The initiative known as the National Information Infrastructure (NII), set forth by the President and the Vice President of the United States, encourages the nation's elementary and secondary schools to connect their classrooms to the "information superhighway." The superhighway is envisioned as an avenue to "global classrooms"—classrooms where students can obtain an array of information available outside the school building by accessing the Internet or other public and private networks through computers. In these networked classrooms students will be able to access on-line data sources such as public libraries, research libraries, government agencies, or services like National Geographic's Kids Network. Along with access to on-line information sources, other network services such as electronic mail facilitate two-way communication without regard to geography. Thus, students can communicate with each other, or with students or experts in other schools, other cities, and around the world. E-mail, electronic bulletin boards and other Internet services also offer expanded opportunities for parent-teacher and parent-school exchanges and among educators, potentially allowing teachers to share teaching plans and strategies.

In addition to broadening the learning resources accessible to students and teachers, it is believed that familiarizing students with various technologies in elementary and secondary school better prepares them for the more technologically sophisticated colleges and work places of today. These potential uses and benefits have led to a national effort to promote the use of telecommunications technologies in elementary and secondary schools and to encourage schools to join the "information superhighway."

Despite the national interest in information technologies and the National Information Infrastructure initiatives, there were no comprehensive national data on the status of advanced telecommunications in elementary and secondary schools until 1994 when a survey of public schools obtained information on the availability and use of various telecommunications technologies. Then, in fall 1995, the U.S. Department of Education's Office of Non-Public Education, in cooperation with the Office of Educational Technology and the National Center for Education Statistics (NCES), commissioned a survey to collect data concerning the status of telecommunications in private schools. A follow-up survey on *Advanced Telecommunications in U.S. Public Elementary and Secondary Schools* (FRSS 57, NCES 96-854) was conducted at the same time.

Private schools represent 24 percent of all elementary and secondary schools and enroll approximately 11 percent of the nation's students. The information obtained from the private school survey provides information about the level of connectivity in private schools in fall

1995. This information will help policymakers and others interested in developing infrastructures to connect all the nation's schools and classrooms to the information superhighway by the year 2000. In addition to helping determine the activities required for the task, the information will also provide private school associations, administrators, and policymakers with valuable baseline information to use to measure change.

The *Survey on Advanced Telecommunications in U.S. Private Schools, K-12* was conducted during fall 1995 for the National Center for Education Statistics (NCES) by Westat, Inc., a research firm in Rockville, Maryland, through the NCES Fast Response Survey System (FRSS). Questionnaires were mailed to school heads, who were asked to have the staff member most knowledgeable about the school's advanced telecommunications provide information on:

- The types of telecommunications equipment and services that were available in private schools and the location of the equipment;
- The types of computer networking capabilities private schools had and their use, administration, and development; and
- Major barriers to private schools' acquisition or use of advanced telecommunications.

The survey was conducted with a nationally representative sample of regular private elementary, secondary, and combined schools in the 50 states and the District of Columbia. Special education, alternative, vocational schools, and schools that taught only prekindergarten, kindergarten, or adult education were not represented in the sample. Survey findings are presented separately for all regular private schools, and by the following school characteristics:

- Affiliation
  - Catholic
  - Other religious (schools affiliated with religions or with a religious orientation other than Catholic)
  - Nonsectarian (schools that are not affiliated with a church or religious orientation)

- Instructional level
  - Elementary
  - Secondary
  - Combined
- Size of enrollment
  - Small: Less than 150
  - Medium: 150 to 299
  - Large: 300 or more
- Metropolitan status-locale of school
  - City
  - Urban fringe
  - Town
  - Rural
- Geographic region
  - Northeast
  - Southeast
  - Central
  - West
- Percent minority enrollment
  - Less than 6 percent
  - 6 to 20 percent
  - 21 to 49 percent
  - 50 percent or more

Data have been weighted to national estimates of regular private schools. All comparative statements made in this report have been tested for statistical significance through chi-square tests or *t*-tests adjusted for multiple comparisons using the Bonferroni adjustment and are significant at the .05 level or better. Data are presented in tables appearing both in the text and as reference tables. Tables 1-9 are part of the text and reference tables (tables 10-21) are included in appendix A.

Advanced Telecommunications in Private Schools

The *Survey on Advanced Telecommunications in U.S. Private Schools, K-12* was designed to examine several factors associated with the availability and use of advanced telecommunications. The basic infrastructure, including equipment and the ability to link equipment within the school and to the information superhighway, was reported by private schools for fall 1995.

Telecommunications Equipment and Services

While the focus of the study was on Internet access, the survey obtained data regarding a variety of telecommunications equipment, services, and networks available in private schools in fall 1995. These included computers, video equipment, and television. Computers are among the most basic equipment needed to begin a journey on the information superhighway. Without connectivity, however, they do little to link schools with outside sources of information or learning.

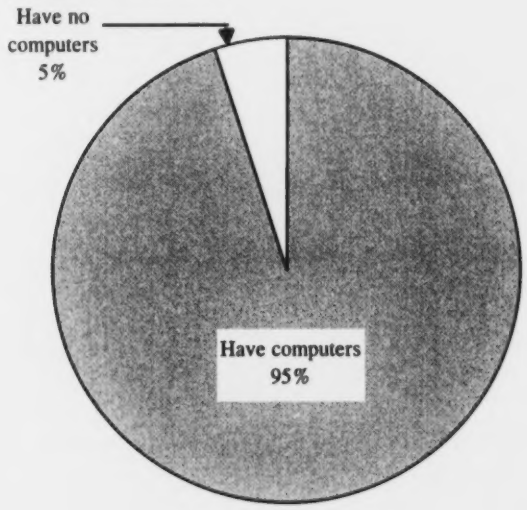
Computers

During the fall 1995 academic year, computers were almost universally available. Ninety-five percent of private schools were equipped with computers (figure 1). Overall, the number of computers in private schools averaged 24 computers per school (table 10). Including computers used for administrative as well as instructional purposes, the student to computer ratio was 9 to 1. The vast majority of these computers, however, did not allow access to the Internet.

The ratio of students per computer differed by affiliation and instructional level. Nonsectarian schools reported fewer students per computer (6) than Catholic schools (10) and other religious schools (9; table 10). There were seven students per computer in private secondary schools compared with nine in private elementary schools.

The mean number of computers in private schools varied by religious affiliation, instructional level, and size of enrollment. Catholic and nonsectarian schools had about twice as many computers per school as other religious schools. There were an average of 31 computers per Catholic school and 32 computers per nonsectarian school, compared with a mean of 16 computers in other religious schools (table 10).

Figure 1.—Percent of private schools equipped with at least one computer for administrative or instructional purposes: 1995



SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

In private secondary schools, the mean number of computers was 50—more than twice that for elementary schools (20 computers) and schools combining elementary and secondary grades (24 computers). By size, private schools with enrollments of 300 or more had an average of 56 computers, compared with 24 computers in schools enrolling 150 to 299 students. Schools with fewer than 150 students averaged 10 computers per school.

Networked Computers

Private schools were asked whether they had a local area network to link equipment and whether they had access to wide area networks including the Internet. Fifty percent of private schools had some sort of computer network, either a local area network, a wide area network, or both (table 1).

Table 1.—Percent of private schools having access to various types of computer networks: 1995

Type of computer network	Percent of schools having access to computer networks
Any type of computer network (i.e., local area network or wide area network)	50
Local area network only	21
Wide area network	29
Internet	25
Other wide area network with no access to Internet	4

NOTE: Details may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Local area networks, which connect computers, printers and other peripherals in one room, building or campus, were available in 43 percent of private schools (table 2). Only 29 percent of private schools provided computers with connections or access to a wide area network capable of linking computers in more distant locations.

Table 2.—Percent of private schools having access to selected telecommunications capabilities and the specific location of telecommunications within the school, by capability: 1995

Telecommunications capabilities	Percent of schools having access	Percent of schools reporting locations of each type of telecommunications capability				
		Administrative offices	Teacher workrooms	Classrooms	Computer labs	Library/media center
Computers connected to a local area network	43	71	18	33	58	35
Computer with modem	48	70	14	24	38	33
Computer with connection or access to a wide area network	29	59	15	26	41	40
Broadcast television	52	24	23	81	27	59
Cable television	37	21	21	75	29	60
Closed-circuit television	5	32	29	99	51	71
One-way video with two-way audio or computer link	5	9	13	50	54	44
Two-way video and audio	2	32	21	66	39	46

NOTE: Percents of schools reporting telecommunications locations do not sum to 100 because many schools reported access in more than one location. Location estimates are based on those schools that have access to the individual type of telecommunications capability.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Although private schools with computer networking capabilities administrative offices were most likely to be connected (71 percent are connected to local area networks and 59 percent are connected to wide area networks), many provided these capabilities in instructional locations as well. More than half the private schools with local area networks reported having this capability in their computer labs (58 percent); while 41 percent of private schools with wide area networks made them available in their computer labs.

Other Telecommunications Equipment and Services

During fall 1995, 48 percent of private schools owned a computer with a modem (table 2). About half (52 percent) of private schools had broadcast television and 37 percent had cable television. Very few had closed-circuit television (5 percent), one-way video with a two-way audio or computer communications link (5 percent), or two-way video and audio (2 percent).

In private schools with broadcast and cable television, classrooms were most frequently equipped with these capabilities (81 and 75 percent, respectively). Although 99 percent of all private schools with closed-circuit television reported having it in the classroom, only 5 percent of private schools had closed-circuit television.

Private School Access to the Internet by School Characteristics

Twenty-five percent of private schools had access to the Internet during fall 1995 (table 11). However, access to the Internet varied by school characteristics including religious affiliation, instructional level, size of enrollment, and metropolitan status. Catholic and nonsectarian schools were twice as likely as those with other religious affiliations to be on the Internet. Thirty-five percent of Catholic schools and 32 percent of nonsectarian schools had Internet access, while 16 percent of other religious schools had access to the Internet in fall 1995 (table 11).

Fifty-seven percent of private secondary schools reported access to the Internet. Less than half that percentage of elementary and combined schools had Internet access; 23 percent of elementary schools and 19 percent of schools combining elementary and secondary grades had Internet access.

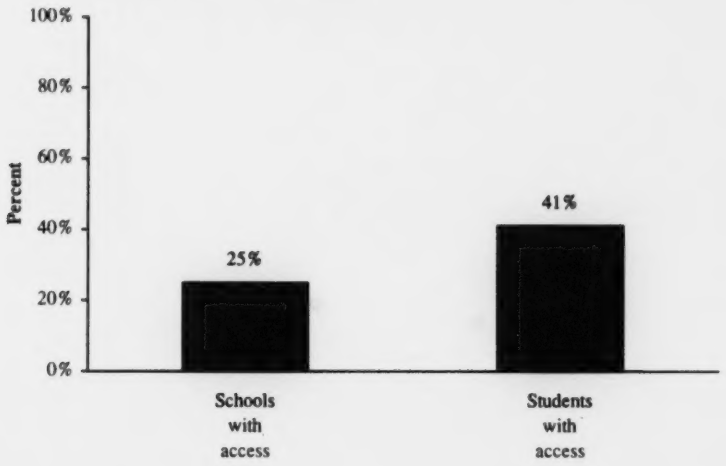
School size was related to Internet access. While 13 percent of small private schools enrolling fewer than 150 students were on the Internet, 27 percent of those with 150 to 299 students, and 50 percent of private schools enrolling 300 or more students were connected to the Internet.

The smallest percentage of private schools on the Internet in fall 1995 was found in rural areas. Nearly one-third (32 percent) of private schools located in cities were on the Internet. Twenty-six percent of those in urban fringe areas and 22 percent in towns had Internet connections, while 4 percent of private schools in rural areas had Internet access.

Accessibility of the Internet in Private Schools

A school's access to the Internet does not necessarily mean that the Internet is widely available for students in that school. However, the use of Internet for student learning is largely dependent upon its accessibility. The physical location of Internet access in the school and the number of connected computers are indicative of student access to the information superhighway. Thus, the survey asked for the number of computers and the number of instructional rooms with Internet capabilities. Many small private schools lacked Internet access while larger schools were more likely to be connected to the Internet. Thus, a higher percentage of private school students had access to the Internet in fall 1995 than schools; 41 percent of private school students attended schools with Internet access (figure 2 and table 11).

Figure 2.—Percent of private schools with access to the Internet and the percent of private school students enrolled in schools with Internet access: 1995



SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Computers with Internet Access

While almost all private schools had computers in fall 1995, only 9 percent of these computers had Internet access (table 11). The percentage of computers on the Internet was four times higher in nonsectarian schools than in schools with religious affiliations. Twenty-three percent of computers held by nonsectarian schools were on the Internet, while 6 percent of computers in Catholic schools and 5 percent of those in other religious schools had Internet access.

In private schools with Internet access, an average of 8 computers per school had access the Internet (table 12). Private schools with Internet access ranged from 46 percent with one connected computer, 31 percent with two to five connected computers, to 7 percent having six to nine and 15 percent reporting 10 or more of their computers had Internet access.

Nonsectarian schools, combined schools, and large schools with Internet access had the largest number of computers per school connected to the Internet (table 12). Nonsectarian schools boasted more than four times the number of Internet connected computers as their Catholic and other religious counterparts. Catholic and other religious schools with Internet access averaged 5 computers each on the Internet, while the mean number of computers with Internet access in nonsectarian schools with Internet was 23. Elementary schools on the Internet could access the Internet from 4 computers, on average. Twice that many computers had Internet access in secondary schools on the Internet. The largest average number of Internet linked computers by level, however, were combined schools with a mean of 20 computers. Large schools on the Internet averaged 14 connected computers compared with a mean of 4 each in small and medium schools (table 12).

Although private schools provided one computer for every 9 students, there were 99 private school students for every computer with Internet access (table 10). Differences were found in the ratio of students per computer with Internet access in private schools. Nonsectarian schools had one computer with Internet access for every 25 students, whereas there were 174 students for every Internet accessible computer in Catholic schools and 171 students per computer with Internet capabilities in other religious schools (table 10).

The ratio of students to Internet accessible computers was lower in private secondary and combined schools than in private elementary schools. There were 48 students in private combined schools and 78 students in private secondary schools for every Internet equipped computer (table 10). By comparison, private elementary schools reported 206 students per Internet accessible computer.

Private schools in rural areas reported higher ratios of students per Internet accessible computer. There were 280 rural private school students per Internet connected computer compared with ratios of 74 to 130 in other locales (table 10).

Internet Access in Instructional Rooms

Overall, 5 percent of instructional rooms in private schools had access to the Internet during the 1995-96 school-year (table 11). However, twenty-seven percent of private schools with Internet access reported that there were no instructional rooms with the access (table 13). Instructional rooms refer to any room used for instructional purposes and include classrooms, labs, media centers, art rooms, rooms used for vocational or special education, etc. An additional 46 percent offered Internet access in only one instructional room in the building. Sixteen percent had 2 to 3 instructional rooms equipped with Internet access, 3 percent had 4 rooms, and 9 percent had Internet capabilities in 5 rooms or more.

Ninety-one percent of nonsectarian schools with Internet access made Internet available for student use in at least one instructional room (derived from table 13). Only 9 percent of nonsectarian schools with Internet access did not provide it in any rooms used for instruction (table 13). On the other hand, 35 percent of Catholic schools that have Internet access did not provide this access in any instructional room.

Large schools with Internet access were also more likely to make it available in instructional rooms than medium-sized schools. Seventeen percent of Internet accessible schools with 300 or more students failed to make it available in instructional rooms compared with 39 percent for medium schools. Of schools with Internet access, secondary schools offered Internet in instructional rooms more often than elementary schools.

Availability of Internet Services to Members of the School Community

Schools were asked whether four relatively popular types of Internet services were available at the school and for use by whom in the school community. Of the private schools with Internet access, 94 percent had E-mail, 72 percent could access the World Wide Web, 69 percent had news groups access, and 67 percent could access resource location services (table 3).

Table 3.—Percent of private schools having access to the Internet, by various types of Internet capabilities and for whom in the school community the capability is available: 1995

Internet capabilities	Available[1]	Members of school community with access to capability[2]		
		Administrative staff	Teachers	Students
E-mail	94	91	74	39
News groups	69	78	79	55
Resource location services (e.g., Gopher, Archie, Veronica, etc.)	67	79	85	68
World Wide Web Access (e.g., Browsers, such as Netscape, MOSAIC)	72	79	87	70

[1] Percents in this column are based upon the number of schools having access to the Internet—25 percent of private schools.

[2] Percents in these columns are based upon the number of schools with the corresponding Internet capability.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

While E-mail was the Internet service most frequently available in private schools for use by the administrative staff (91 percent), a higher proportion of schools with other Internet services made these other services available to students. Seventy percent of private schools with World Wide Web access made it available to students, 68 percent of schools with resource location services made them available to students, and students could avail themselves of news group services in 55 percent of the private schools with this type of service. Thirty-nine percent of schools with E-mail provided access for students.

Wide Area Network Use

The survey obtained information about the extent of use of wide area networks by the school community: the administrative staff, teachers, and students in schools with Internet access. Overall, private schools indicated that administrators, teachers, and students used wide area networks to a moderate or large extent at about the same rate, 27 to 29 percent (table 14). The extent of use differed by type of private school, however. Catholic school administrative staff were twice as likely to use wide area networks to a moderate or large extent (35 percent) than those in other religious schools (17 percent). Administrative staff also accessed the Internet more frequently in

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elementary schools (33 percent) compared with secondary schools (18 percent).

Of the schools on the Internet, wide area network use by students was higher in nonsectarian schools than in religiously affiliated schools. Students attending nonsectarian schools were more likely to use wide area networks than those attending religiously affiliated schools; students in 45 percent of nonsectarian schools on the Internet used wide area networks to a moderate or large extent compared with 24 percent of Catholic schools and 21 percent of other religious schools. Of the private schools on the Internet, 15 percent with 50 percent or more minority enrollment reported a moderate or large extent of wide area network use among students, compared with 27 to 32 percent of schools with 20 percent or less minority enrollment. Sixty-one percent of private schools on the Internet with minority enrollments of 50 percent or more reported no student use of their wide area network.

Connecting to the Internet

Most private schools with Internet access connected through other wide area networks such as America On-line, CompuServe, Prodigy, Connect, etc. Seventeen percent had access only through other wide area networks, while 7 percent had direct access to the Internet, including 5 percent with direct access only and 2 percent reporting both direct access and access through other wide area networks (table 15).

The vast majority of private schools on the Internet relied on modems to connect to wide area networks. Ninety-four percent of private schools used modems to access wide area networks. Smaller proportions (16 percent) had higher speed connections such as Serial Line Internet Protocol (SLIP) or Point to Point Protocol (PPP) (table 16). Connections via 56Kb, T1, and Integrated Services Digital Network (ISDN) were rare among private schools (2 to 3 percent for each).

Developing and Administering Telecommunications Activities

Schools were asked to report the extent to which various groups had played a formal role in the development of the advanced telecommunications activities in the school. Private schools indicated that teachers and school staff were the most likely to play a large formal role in developing the schools telecommunications program (41 percent; table 4). While 15 percent indicated that parents had played a large role, 31 percent of schools indicated that parents played a moderate role in developing the schools' telecommunications activities.

Networks in private schools were managed in a variety of ways. Fourteen percent of private schools with Internet access had a full-time network administrator to coordinate or manage their systems (table 17). The largest percentage were managed by a part-time administrator (58 percent) and 28 percent reported that no single individual was responsible.

Table 4.—Percent of private schools reporting the extent of the formal role that various groups had in developing the school's advanced telecommunications activities: 1995

Various groups	Small or no extent	Moderate extent	Large extent
Students	85	12	4
Teachers/staff	29	30	41
Parents	55	31	15
State associations	94	4	1
Regional associations	92	6	2
National associations	96	4	1
Business leaders	89	8	3
Institutions of higher education	90	8	2
Other community organizations	92	6	1

NOTE: Percents may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Plans For Internet Access

During the 1995-96 academic year, 75 percent of private schools were without Internet access. Sixty percent of these schools reported no plans to connect to the Internet in the future (table 18). Catholic schools were more likely to have plans for future Internet access than other religiously affiliated schools. Fifty percent of Catholic schools without access had plans to obtain Internet access in the future compared with 34 percent of other religious schools.

A majority of secondary schools and those with enrollments over 300 anticipated eventually connecting to the Internet. Of the schools that did not have Internet access, 60 percent of secondary schools planned to connect, compared with 41 percent of elementary schools and 33 percent of combined schools. Sixty-five percent of large schools planned to obtain access to the Internet, while 45 percent of medium-sized schools had such plans. Fewer, 31 percent of small schools, planned to access the Internet in the future.

Barriers To Internet Access

Private schools indicated the extent to which various factors impeded access and use of advanced telecommunications. Schools rated problems such as those associated with equipment and other physical aspects of telecommunications, funding, software, telecommunications service providers, lack of interest , and incompatibility of telecommunications with educational policies of schools. Neither policy (use of technology as an appropriate education tool) nor problems with telecommunications providers were blocking advanced telecommunications in private schools. Student, teacher, parent and community interest were also not lacking. Rather, it was the financial and physical constraints that were holding back the greater acquisition and use of advanced telecommunications in private schools in fall 1995. Sixty-one percent of private schools cited funding as a major barrier to the acquisition or use of advanced telecommunications by the school (table 19). Lack of equipment or poor equipment was considered a major barrier in 38 percent of private schools, and too few telecommunications access points in the building was perceived to be a major barrier in 36 percent of private schools. These were among the most frequently cited barriers in private schools both with and without Internet access.

Barriers in Private Schools with Internet Access

Forty-six percent of schools with Internet access considered a lack of funds allocated for telecommunications to be a major barrier to upgrading or maximizing the use of advanced telecommunications (table 20). This was followed by an inadequate number of access points in the building (38 percent) and inadequate equipment (33 percent). Concern about student access to inappropriate materials, lack of teacher awareness regarding ways to integrate telecommunications into the curriculum, and inaccessibility of telecommunications equipment were major barriers in 20 to 24 percent of private school with Internet access.

Among private schools with Internet access, Catholic schools were more likely to cite funds as a barrier to advanced telecommunications than nonsectarian schools. Fifty-two percent of Internet-connected Catholic schools compared with 32 percent of Internet-connected nonsectarian schools considered lack of funds allocated for telecommunications a major barrier to upgrading or maximizing the use of advanced telecommunications in fall 1995.

Inadequate numbers of telecommunications access points in the building was a barrier primarily among larger schools with Internet access. While only 22 percent of the smallest Internet-connected private schools (those with less than 150 students) found the number of telecommunications access points in the school to be a major barrier, 45 percent of those with 150 to 299 students and 43 percent of those with 300 or more students reported the number of access points was a major barrier.

Barriers in Private Schools without Internet Access

Funds were a major barrier to the acquisition and use of advanced telecommunications in a majority (66 percent) of private schools that did not have Internet access in fall 1995 (table 21). Seventy-two percent of Catholic schools without Internet access cited lack of funds as a major barrier compared with 53 percent of nonsectarian schools without access to the Internet.

In 40 percent of private schools without Internet access, lack of equipment or poor equipment was a major barrier. Private elementary and secondary schools without Internet access reported more problems with equipment than private combined schools without Internet. Equipment deficiencies were a major barrier in close to half of private elementary (45 percent) and secondary (49 percent) schools without Internet access, compared with 28 percent for private combined schools without Internet.

Equipment was also more likely to be a major barrier among urban and suburban private schools without Internet access. Half (50 percent) of private schools without Internet access in cities and 45 percent in urban fringe locales reported inadequate equipment was a major barrier, compared with 28 percent for towns and 21 percent for rural locales.

Overall, 36 percent of private schools without Internet reported that too few telecommunications access points in the building was a major barrier to the acquisition and use of advanced telecommunications. Access points were a more common barrier in Catholic schools without Internet access (44 percent) than in other religious schools without Internet (31 percent). This was also more frequently cited by private schools without Internet located in urban fringe locales (44 percent) compared with rural locales (20 percent).

Overall, 26 percent of private schools without Internet access expressed concern about student access to inappropriate materials. While only 19 percent of Catholic schools without Internet expressed this concern, 31 percent of other religious schools cited this as a major barrier to the acquisition or use of advanced telecommunications in their schools. Private combined schools without Internet access (35 percent) were also more likely than private elementary (23 percent) or secondary (16 percent) schools without Internet access to consider concern about inappropriate materials a major barrier.

Selected Comparisons with Public Schools

Identical information was collected for the same time period from both private and public schools. A few comparisons of selected data are noteworthy.

In fall 1995, public schools were twice as likely to have connected to the information superhighway as their private school counterparts. While one-fourth of private schools had access to the Internet, 50 percent of all public schools had Internet access (table 1). Public schools also reported Internet access in a greater proportion of instructional rooms, although the numbers were low for both public (9 percent) and private schools (5 percent). Among those with access, 73 percent of private schools on the Internet provided access in one or more instructional rooms, while 93 percent of public schools with Internet access equipped at least one instructional room with access (table 5).

Table 5.—Percent of schools and instructional rooms with Internet access, and the number of instructional rooms with access to the Internet in schools with Internet access, by school type: 1995

Type of school	Percent with Internet access		Percent distribution of number of instructional rooms with Internet access*				
	Schools	Instructional rooms	0 rooms	1 room	2-3 rooms	4 rooms	5 or more rooms
Private	25	5	27	46	16	3	9
Public	50	9	7	47	24	4	19

*For schools with Internet access—25 percent of private schools and 50 percent of public schools.

NOTE: Details do not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunicationsin U.S. Private Schools, K-12," FRSS 56, 1995; and "Survey on Advanced Telecommunicationsin Public Schools, K-12," FRSS 57, 1995.

While on average public schools reported almost three times the number of computers as private schools (72 compared with 24 computers per school), relatively small percentages of these computers had access to the Internet (table 6) in either private schools (9 percent) or public schools (14 percent).

Table 6.—Mean number of computers and percent of computers with Internet access in private and public schools: 1995

Type of school	Mean number of computers	Percent of computers with Internet access
Private	24	9
Public	72	14

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995; and "Survey on Advanced Telecommunications in Public Schools, K-12," FRSS 57, 1995.

Overall, about half of private schools had some type of computer network compared with 85 percent for public schools (table 7). Lower proportions of private schools than public schools reported local area networks as well as wide area networks.

Table 7.—Percent of private and public schools with computer networks: 1995

Type of network	School type	
	Private	Public
Any network	50	85
Local area network	43	77
Wide area network	29	61
Internet	25	50
Other wide area network with no access to Internet	4	11

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995; and "Survey on Advanced Telecommunications in U.S. Public Schools, K-12," FRSS 57, 1995.

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Patterns of Internet use among students were similar in public and private schools. Twenty-seven percent of private schools and 21 percent of public schools with Internet access reported a moderate or large extent of student wide area network use (table 8). Similarly, teachers' wide area network use was reported as moderate to large in 29 percent of private schools and 28 percent of public schools on the Internet. Teachers in public schools, however, were more likely to use wide area networks to a small extent than those in private schools, but private schools (23 percent) were twice as likely to report no teacher use of wide area networks than public schools (11 percent).

Table 8.—Percent of private and public schools having access to the Internet, by the extent of wide area network use by various members of the school community: 1995

Type of school	Administrative staff			Teachers			Students		
	Not at all	Small extent	Moderate or large extent	Not at all	Small extent	Moderate or large extent	Not at all	Small extent	Moderate or large extent
Private.....	14	57	29	23	48	29	37	36	27
Public.....	27	55	18	11	61	28	32	47	21

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995; and "Survey on Advanced Telecommunicationsin U.S. Public Schools, K-12," FRSS 57, 1995.

Private school administrative staff (29 percent) on the other hand, were more likely to use wide area networks to a moderate or large extent than their public school counterparts (18 percent) and about half as likely never to use wide area networks.

Summary And Conclusions

The *Survey on Advanced Telecommunications in U.S. Private Schools, K-12* provided valuable information on the status of telecommunications. Those interested in projecting the scope and level of effort that is involved in connecting all American schools and classrooms to the information superhighway will find the data provided by private schools an essential piece of the picture.

While one-fourth of all private schools had Internet access somewhere in the building, fewer were providing this capability in instructional rooms. Only 5 percent of instructional rooms in private schools nationwide had Internet access. To maximize the educational value of on-line services, Internet needs to be more readily accessible to teachers and students.

The status of advanced telecommunications in private schools varied by school characteristics. The development of telecommunications activities appeared to be further along in private secondary schools and private schools with larger enrollments. More than half of

private secondary schools and 50 percent of private schools with enrollments of 300 or more students had Internet access. Sixty percent of secondary schools and 65 percent of large schools that were not connected planned to obtain access in the future. Seventy percent of private secondary school students were enrolled in schools with Internet access.

Differences in telecommunications activities were also found by school affiliation. Thirty-two percent of nonsectarian schools had Internet access. This is similar to Catholic schools (35 percent of Catholic schools had Internet access) but twice the rate of Internet availability in other religious schools (16 percent). The percentage of instructional rooms with Internet access was highest in nonsectarian schools—13 percent compared to 4 percent in Catholic and 2 percent in other religious schools. In addition to having a lower student to computer ratio (6 students per computer compared to 9 to 10 computers per student in other private schools), nonsectarian schools reported significantly lower ratios of students per computer with Internet access. There were 25 students for every computer with Internet access in nonsectarian schools, compared with ratios of 174 in Catholic schools and 171 in other religious schools. Students in nonsectarian schools that had wide area networks were more likely to use the Internet to a moderate or large extent than those in religiously affiliated schools (45 percent compared with 21 to 24 percent). Thirty-eight percent of nonsectarian schools without access indicated that they had plans to connect to the Internet in the future.

Catholic schools were among the most likely to have Internet access. Thirty-five percent of Catholic schools were connected to the Internet, compared with 16 percent for other religious schools. Also, Catholic schools not connected to the Internet were more likely than other religiously affiliated schools to have plans to connect to the information superhighway in the future. However, only 4 percent of all instructional rooms in Catholic schools had Internet access. On average, Catholic schools reported 31 computers per school, but only 6 percent of the computers in Catholic schools had Internet access and there were 174 Catholic school students for every available computer with Internet access in Catholic schools. Still, 27 percent of Catholic schools with Internet access reported a moderate to large extent of teacher use and 24 percent reported a moderate to large extent of student use of wide area networks.

Other religious schools reported lower rates of Internet access—16 percent compared with 32-35 percent for nonsectarian and Catholic schools, respectively. On average, other religious schools had fewer computers than other private schools (16 compared with 31 to 32) and reported a higher student to computer ratio (9) than nonsectarian schools (6). Only 2 percent of instructional rooms were equipped

with Internet access in other religious schools, which reported 171 students for every computer with Internet access—a ratio comparable to Catholic schools (174) but much higher than nonsectarian schools (25). Twenty-three percent of other religious schools with wide area networks reported that teachers used the Internet to a moderate or large extent and 21 percent reported moderate to large extent of student use. About one-third (34 percent) of other religious schools without Internet access indicated that they had plans to connect in the future.

The goal of the National Information Infrastructure is to connect all classrooms to the information superhighway. This study indicates that while many private schools had advanced telecommunications technologies by fall 1995, most did not have Internet access. Further, even in schools with Internet, these technologies were not readily available in instructional rooms for students use. It is possible that many private schools connect administrative offices to the Internet first, and as funding and more computers become available, additional access is provided in classrooms and computer labs. Future research could shed light on the pattern of acquisition and implementation of technologies in private schools. Future research might also consider schools' plans and initiatives for teacher development in the use of advanced telecommunications in the classroom. This would contribute to a better understanding about the implementation and integration of technologies in the classroom and whether priorities differ by instructional level, program, or subject.

Survey Methodology and Data Reliability

Sample Selection

The sampling frame for the FRSS Survey on Advanced Telecommunications in U.S. Private Schools, K-12 was constructed from the 1993-94 NCES Private School Survey (PSS) Universe File. The complete file contains approximately 26,000 schools including over 8,000 Catholic schools, 12,000 schools with religious affiliations other than Catholic, and about 5,500 nonsectarian schools. By level, the file contains about 15,600 elementary, 2,500 secondary, and 8,000 combined schools.

A private school was defined as a school not in the public system that provides instruction for any of grades 1-12 (or comparable ungraded levels) where the instruction was not provided in a private home. All regular private elementary, middle, secondary, and combined schools in the 50 states and the District of Columbia were included in the sampling frame. Special education, vocational, and alternative schools, and schools that taught only prekindergarten, kindergarten, or adult education were excluded from the frame prior to sampling. With these exclusions, the final sampling frame consisted of approximately 22,000 eligible private schools enrolling over 4.6 million students (table A-1).

The sample was stratified by instructional level (elementary, secondary, and combined) and then by type of orientation (Catholic, other religious, and nonsectarian) within level to define six primary strata. Within each primary stratum, schools were sorted by size of enrollment (less than 150, 150-299, and 300 or more), geographic region (northeast, southeast, central, and west), metropolitan status (city, urban fringe, town and rural) and percent minority enrollment (less than 6 percent, 6-20 percent, 21-49 percent, and 50 percent or more). The sample sizes were then allocated to the primary strata in rough proportion to the aggregate square root of the enrollment of schools in the stratum. The use of the square root of enrollment to determine the sample allocation was expected to be reasonably efficient for estimating both school-level characteristics (e.g., percent of schools on the Internet) and quantitative measures correlated with enrollment (e.g., the number of students enrolled in schools on the Internet). Further, the sample sizes were large enough to permit analyses of the questionnaire items (along one dimension) by three types of affiliation, three instructional levels, three enrollment sizes, and by the four urbanicity classes, four regions, and four levels of minority enrollment (table A-1).

Table 9.—Number and percent of responding private schools in the study sample and estimated number and percent of private schools and private school students the sample represents, by school characteristics: 1995

School characteristic	Respondent sample of schools		National estimate of schools*		National estimate of students*	
	Number	Percent	Number	Percent	Number	Percent
					Millions	
All private schools	873	100	22,157	100	4.6	100
Affiliation						
Catholic	373	43	8,022	36	2.4	53
Other religious	321	37	10,958	49	1.6	34
Nonsectarian	179	21	3,177	14	0.6	13
Instructional level						
Elementary	448	51	14,085	64	2.7	58
Secondary	225	26	2,126	10	0.8	17
Combined	200	23	5,946	27	1.1	25
Size of enrollment						
Less than 150	277	32	10,923	50	0.8	17
150 to 299	226	26	6,224	28	1.3	29
300 or more	367	42	4,878	22	2.5	54
Metropolitan status						
City	398	46	8,707	39	2.2	48
Urban fringe	273	31	6,861	31	1.5	33
Town	140	16	4,162	19	0.7	14
Rural	62	7	2,427	11	0.2	5
Geographic region						
Northeast	255	29	5,919	27	1.4	30
Southeast	162	19	4,068	18	0.8	18
Central	242	28	6,477	29	1.3	28
West	214	25	5,692	26	1.1	24
Percent minority enrollment						
Less than 6 percent	311	37	9,014	42	1.7	38
6 to 20 percent	272	32	6,154	29	1.4	32
21 to 49 percent	140	17	3,349	16	0.7	15
50 percent or more	125	15	2,964	14	0.6	14

*There are approximately 26,000 private schools enrolling 4.8 million students in the United States. National estimates of the number of private schools and private school students reported in this table represent only those schools and students that are represented in the survey sample. The sampling criteria used excluded special education, alternative, and vocational schools, and schools that taught only prekindergarten, kindergarten, or adult education. These excluded types of schools account for approximately 4,000 private schools and 200,000 private school students that are not represented by the data presented in this report.

NOTE: Percents may not sum to 100 because of rounding, and details may not add to totals because of rounding for weighted estimates. Size of enrollment was not reported for 3 schools and minority enrollment was not available for 25 schools in the sample.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Respondents and Response Rates

In October, 1995, survey instruments (see appendix C) were mailed to 999 private school heads. The Heads of Schools were asked to forward the questionnaire to the computer technology coordinator or to whomever was most knowledgeable about the availability and use of advanced telecommunications at the school. The accompanying instructions requested that the school complete the self-administered questionnaire and return it by mail. Only ten percent of the questionnaires sent to private schools were completed by someone with the title of computer or technology coordinator and one percent were returned by library/media specialists. Most were completed by the school head (45 percent) or other staff—typically a teacher who was considered knowledgeable about the school's telecommunications capabilities (44 percent). Telephone followup was conducted with schools that did not complete the survey by mail. Fifty-two percent of the questionnaires were received by mail or fax, and 48 percent were obtained by telephone.

Of the 999 schools in the sample, 12 were found to be out of the scope of the study (because of closing), leaving 987 eligible schools in the sample. Data collection was completed in January, 1996. The survey response rate was 88 percent (873 schools that completed questionnaires divided by 987 eligible schools in the sample). The weighted response rate was 87 percent. Item nonresponse ranged from 0.0 to 2.5 percent.

Sampling and Nonsampling Errors

The responses were weighted to produce national estimates for regular private schools. The sample weights were the inverse probability of selection adjusted for nonresponse—designed to adjust for the variable probabilities of selection and differential nonresponse. The findings of this report are estimates based on the sample selected and, consequently, are subject to sampling variability.

The survey estimates are also subject to nonsampling errors that can arise because of nonobservation (nonresponse or noncoverage) errors, errors of reporting, and errors made in collection of the data. These errors, when present, may result in biased data. Nonsampling errors may include such problems as the differences in the respondents' interpretation of the meaning of the question; memory effects; misrecording of responses; incorrect editing, coding, and data entry; differences related to the particular time the survey was conducted; or errors in data preparation. While general sampling theory can be used in part to determine how to estimate the sampling variability of a statistic, nonsampling errors are not easy to measure and, for measurement purposes, usually require that an experiment be conducted as part of the data collection procedures or that data external to the study be used.

To minimize the potential for nonsampling errors, the questionnaire was pretested with private school heads and computer/technology coordinators like those in the survey population. During the design of the survey and the survey pretest, an effort was made to check for consistency of interpretation of questions and terms and to eliminate ambiguous items or instructions. The questionnaire and instructions were extensively reviewed by the National Center for Education Statistics and the Office of Nonpublic Education. Manual and machine editing of the questionnaire responses were conducted to check the data for accuracy and consistency. Cases with missing or inconsistent items were recontacted by telephone. Imputations for item nonresponse were not implemented, as item nonresponse rates were very low (less than 2.5 percent). Data were keyed with 100 percent verification.

Variances

The standard error is a measure of the variability of estimates due to sampling. It indicates the variability of a sample estimate that would be obtained from all possible samples of a given design and size. Standard errors are used as a measure of the precision expected from a particular sample. If all possible samples were surveyed under similar conditions, intervals of 1.96 standard error below to 1.96 standard errors above a particular statistic would include the true value 95 percent of the time . For example, the estimated percentage of private schools reporting that they have access to the Internet is 25 percent, and the estimated standard error is 1.4 percentage points. The 95 percent confidence interval for the statistic extends from [25 - (1.4 times 1.96)] to [25 + (1.4 times 1.96)], or from 22.3 to 27.7 percent.

Estimates of standard errors were computed using a technique known as jackknife replication, which accounts for the complexities of the sample design. As with any replication method, jackknife replication involves constructing a number of subsamples (replicates) from the full sample and computing the statistic of interest for each replicate. The mean square error of the replicate estimates around the full sample estimate provides an estimate of the variance of the statistic (see Wolter 1985, Chapter 4). To construct the replication, 40 stratified subsamples of the full sample were created and then dropped one at a time to define 40 jackknife replicates. A computer program (WESVAR) available from Westat, Inc., was used to calculate the estimates of standard errors. The software runs under IBM/OS and VAX/VMS systems.

Background Information

The survey was conducted and analyses performed by Westat, Inc., using the NCES Fast Response Survey System (FRSS). Westat's Project Director was Elizabeth Farris, and the Associate Project Director and Survey Manager was Sheila Heaviside. Judi Carpenter, Shelley Burns, and Edith McArthur were the NCES Project Officers. The survey was requested by Jack Klenk and Michelle Doyle of the Office of Non-Public Education, U.S. Department of Education. The survey instrument was adapted from an instrument developed by Westat in conjunction with Gerald Malitz at NCES and used to obtain data from public schools in 1994. The following individuals reviewed the private school instrument and survey methods:

Inside NCES

- Stephen P. Broughman, Survey and Cooperative Systems Group
- Mary Frase, Data Development and Longitudinal Studies Group
- Daniel Kasprzyk, Survey and Cooperative Systems Group
- Gerald Malitz, Survey and Cooperative Systems Group

Outside NCES

- Jefferson G. Burnett, National Association of Independent Schools
- Michelle Doyle, Office of Non-Public Education, U. S. Department of Education
- David Eary, Council for American Private Education
- Martha Galindo, National Association of Independent Schools
- John Holmes, Association of Christian Schools International
- Jack Klenk, Office of Non-Public Education, U.S. Department of Education
- Mary Jo Milkes, National Catholic Education Association

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For more information about the Fast Response Survey System or the Survey of Advanced Telecommunications in U.S. Private Schools, K-12, contact Shelley Burns, National Center for Education Statistics, Office of Data Development and Longitudinal Studies, 555 New Jersey Avenue, NW, Washington, DC 20208-5651, telephone (202) 219-1463.

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Advanced Telecommunications in U.S. Public Elementary and Secondary Schools, 1995, FRSS 57, NCES 96-854.

Advanced Telecommunications in U.S. Public Schools, K-12, 1994, FRSS 51, NCES 95-731.

Private School Universe Survey, 1993-94, 1996, NCES 96-143.

Glossary of Terms

Terms Defined on the Survey Instrument

Advanced Telecommunications - refers to modes of communication used to transmit information from one place to another including broadcast and interactive television, networked, computers, etc.

Broadcast Television - refers to network television such as NBC, CBS, etc.

Cable Television - refers to subscription television such as CNN, Learning Channel, Discovery, etc.

Closed-circuit television - refers to the transmission of television on noncommercial lines (e.g., inhouse broadcast).

E-mail (electronic mail) - refers to text messages transmitted across networks and usually accessible only by the addressee.

56Kb - refers to a digital transmission speed of 56 Kilo (thousand) bits per second.

Instructional rooms - refers to rooms in the school building used for any instructional purposes (includes classrooms, labs, media centers, art rooms, rooms used for vocational and special education, etc.).

Internet - refers to a network of networks all running the TCP/IP protocols, sharing the same underlying network address space as well as the same domain name space, and interconnected into a network of information.

ISDN (Integrated Services Digital Network) - refers to data communication that integrates voice and data.

Local area network (LAN) - refers to the linkage of computers and/or peripherals (e.g., printer) confined to a limited area that may consist of a room, building, or campus that allows users to communicate and share information.

Modem - a device which connects between a computer and a phone line to translate between the digital signal of the computer and the analog signal required for telephone transmission.

News groups - electronic conferences/discussiongroups similar to maillists. News group messages, called articles, are not mailed to a subscriber's E-mailbox but are distributed to a subscribing system's news server. The single copy is then accessed by all users on their network-connectedmachines. Each news group focuses on a subject area.

One-way video with two-way audio or two-way computer link - refers to the ability to transmit or receive a picture in one direction

with the capability to communicate in two directions (interactively) via computer or some audio method.

PPP (Point to Point Protocol) - refers to a protocol that allows a computer to use TCP/IP (Internet) protocols (and become a full-fledged Internet member) with a standard telephone line and a high speed modem. See SLIP.

SLIP (Serial Line Internet Protocol) - refers to a protocol that allows a computer to use TCP/IP (Internet) protocol using serial lines such as dial-up telephone lines. See PPP.

T1 rate - refers to a digital transmission speed of 1.544 Mega (millions) bits per second.

Two-way video and audio - refers to the ability to transmit and receive pictures and sounds simultaneously in real time.

Wide area network - refers to a data communications linkage designed to connect computers over distances greater than the distance transmitted by local area networks (e.g., building to building, city to city, across the country, or internationally) that allows users to communicate and share information.

World Wide Web (WWW) - refers to a system that allows access to information sites all over the world using a standard common interface called hypertex to organize and search information. It simplifies the process of finding a site, connecting, locating the appropriate documents and downloading the information through the use of a browser (e.g., Netscape, Mosaic).

Other Terms Used on the Questionnaire or in the Survey Report

Archie - a research tool on the Internet for finding network host computers that have programs or data file which can be transferred to your machine.

Browsers - software application that allows the user to access a server computer on the Internet (e.g., Netscape).

Gopher - software which permits searching files on the Internet on remote hosts using layered menus. Text from these files can be read on-line or the files can be transferred to your computer.

Mosaic - World Wide Web browser or client capable of accessing data via protocols such as Gopher and World Wide Web (WWW) directly that will receive and display a wide variety of data types.

Netscape - a browser software application that allows the user to access a server computer on the Internet.

Veronica (Very Easy Rodont-Oriented Net-wide Index to Computerized Archives) - an Internet search tool that does keyword searches of indexes of Gopher documents at Internet sites.

Sample Universe and Classification Variables

1993-94 NCES Private School Survey (PSS) Universe File - a data base containing one record for each private elementary, secondary and combined school in the 50 states and the District of Columbia as reported to the National Center for Education Statistics in the Private School Universe Survey, 1993-94.

School - schools are those offering a conventional academic program.

Affiliation

Catholic - schools religiously affiliated with the Catholic Church. This includes parochial schools associated with parishes, diocesan, and private or independent Catholic schools.

Other religious - schools affiliated with religions or with a religious orientation other than Catholic such as a national denomination, schools affiliated with a Conservative Christian school association and those religious schools that are not affiliated with a national denomination or a conservative Christian association.

Nonsectarian - schools that are not affiliated with a church or a religious orientation.

Instructional level

Elementary - a school that had grade 6 or lower, or "ungraded" and no grade higher than 8th. It would include schools comprised of students in grades 1 through 6, students in grades 7 and 8 when the remainder of the students in the school are in the lower grades or are ungraded, and students in ungraded classes in schools with no grade higher than the 8th grade.

Secondary - a school that had no grade lower than the 7th, or "ungraded" and had grade 7 or higher. This category includes schools comprised of students in grades 9 through 12, students in grades 7 and 8 when the remainder of the students in the school are in grades above 8th or are ungraded, and students in ungraded classes in schools with no grade lower 7th.

Combined - a school that has grades higher than the 8th and lower than the 7th. It includes schools comprised of students in any grade in schools that range below grade 7 and above grade 8, or of students that are all in ungraded classes.

Size of enrollment

Less than 150 - schools with total enrollments under 150 students as reported on PSS Universe were considered schools with relatively small enrollments for analytical purposes.

150-299 - schools with total enrollments from 150 to 299 students are considered medium-sized schools.

300 or more - schools with total enrollments of 300 or more students are considered large schools.

Metropolitan status—Locale of school based on school's mailing address matched to Bureau of the Census data files containing population density data, standard metropolitan statistical area (SMSA) codes, and a census code identifying urban and rural schools.

City - a central city of a Metropolitan Statistical Area (MSA).

Urban fringe - a place within an MSA of a large or mid-size central city and defined as urban by the U.S. Bureau of the Census.

Town - a place not within an MSA, but with a population greater than or equal to 2,500, and defined as urban by the U.S. Bureau of the Census.

Rural - a place with a population less than 2,500 and defined as rural by the U.S. Bureau of the Census.

Geographic region - the geographic regions are those used by the National Assessment of Educational Progress and the National Education Association. (The National Education Association designates the Central region as "Middle" region in its classification.)

Northeast - Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.

Southeast - Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia.

Central - Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin.

West - Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oklahoma, Oregon, Texas, Utah, Washington, and Wyoming.

Percent minority enrollment

Less than 6 percent - less than 6 percent of the students enrolled in the school were American Indian or Alaskan Native; Asian or Pacific Islander; Hispanic, regardless of race (Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin); or Black (not of Hispanic origin).

6 to 20 percent - between 6 and 20 percent of the students enrolled in the school were members of a racial/ethnic minority.

21 to 49 percent - between 21 and 49 percent of the students enrolled in the school were members of a racial/ethnic minority.

50 percent or more - between 50 and 100 percent of the students enrolled in the school were members of a racial/ethnic minority.

APPENDIX A

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Table 10.—Mean number of computers in private schools, the ratios of private school students to computers and to computers with Internet access, by school characteristics: 1995

School characteristic	Mean number of computers[1]	Number of students per computer[2]	Number of students per computer with Internet access[2]
All private schools	24	9	99
Affiliation			
Catholic	31	10	174
Other religious	16	9	171
Nonsectarian	32	6	25
Instructional level			
Elementary	20	9	206
Secondary	50	7	78
Combined	24	8	48
Size of enrollment			
Less than 150	10	7	137
150 to 299	24	9	217
300 or more	56	9	72
Metropolitan status			
City	29	9	88
Urban fringe	26	8	130
Town	18	9	74
Rural	10	9	280
Geographic region			
Northeast	26	9	119
Southeast	22	9	88
Central	24	8	77
West	23	8	127
Percent minority enrollment			
Less than 6 percent	21	9	141
6 to 20 percent	32	7	58
21 to 49 percent	25	8	135
50 percent or more	19	11	235

[1]The mean number of computers is based upon the total number of computers reported by private schools, including those used for administrative purposes.

[2]The number of students per computer and the number of students per computer with Internet access are based upon the total number of students attending all regular private elementary, secondary, or combined schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 11.—Percent of private schools having access to the Internet, percent of private school students attending schools with Internet access, and the percent of instructional rooms and computers with Internet access in private schools, by school characteristics: 1995

School characteristic	Percent of private schools having access to the Internet	Percent of private school students attending schools with Internet access	Percent of all private school instructional rooms across the country with Internet access[1]	Percent of private school computers with Internet access[1]
All private schools	25	41	5	9
Affiliation				
Catholic	35	43	4	6
Other religious	16	30	2	5
Nonsectarian	32	59	13	23
Instructional level				
Elementary	23	32	3	5
Secondary	57	70	6	10
Combined	19	41	8	16
Size of enrollment				
Less than 150	13	16	2	5
150 to 299	27	28	3	4
300 or more	50	56	8	13
Metropolitan status				
City	32	46	6	10
Urban fringe	26	39	4	7
Town	22	34	5	12
Rural	4	21	1	3
Geographic region				
Northeast	28	38	5	8
Southeast	22	46	5	10
Central	23	39	6	11
West	26	44	3	7
Percent minority enrollment				
Less than 6 percent	24	38	3	7
6 to 20 percent	29	51	9	13
21 to 49 percent	29	44	3	6
50 percent or more	18	24	2	5

[1]The percent of instructional rooms across the country is based upon the total number of instructional rooms (e.g., classrooms, computer labs, library/media centers) in all regular elementary, secondary, and combined private schools. The percent of computers is based upon the total number of computers in all regular private schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 12.—Percentage distribution of private schools having access to the Internet by the number of computers with Internet access and by the mean number of computers with Internet access, by school characteristics: 1995

School characteristic	Number of computers with Internet access				Mean number of computers with Internet access
	1 computer	2-5 computers	6-9 computers	10 or more computers	
All private schools	46	31	7	15	8
Affiliation					
Catholic	48	37	3	12	5
Other religious	57	21	13	9	5
Nonsectarian	23	33	8	35	23
Instructional level					
Elementary	54	31	6	9	4
Secondary	43	33	5	18	8
Combined	30	29	13	29	20
Size of enrollment					
Less than 150	67	13	10	10	4
150 to 299	54	30	8	8	4
300 or more	29	43	5	23	14
Metropolitan status					
City	45	35	2	18	9
Urban fringe	47	30	10	13	7
Town	50	20	18	12	10
Rural	42	46	0	12	7
Geographic region					
Northeast	47	35	3	15	7
Southeast	32	40	11	17	10
Central	54	26	5	15	11
West	47	27	11	15	6
Percent minority enrollment					
Less than 6 percent	56	29	4	11	6
6 to 20 percent	31	36	10	24	14
21 to 49 percent	41	35	14	10	5
50 percent or more	66	21	1	12	5

NOTE: Percents in this table are based upon the number of schools having access to the Internet and means are based upon the number of computers in schools with Internet access—25 percent of private schools. Percents may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 13.—Percentage distribution of private schools having access to the Internet by the number of instructional rooms with Internet access, by school characteristics: 1995

School characteristic	Number of instructional rooms with Internet access				
	0 rooms	1 room	2-3 rooms	4 rooms	5 or more rooms
All private schools	27	46	16	3	9
Affiliation					
Catholic	35	39	18	*	7
Other religious	24	59	12	1	5
Nonsectarian	9	41	21	11	19
Instructional level					
Elementary	36	45	13	1	6
Secondary	15	54	19	4	8
Combined	16	40	21	7	17
Size of enrollment					
Less than 150	30	60	4	3	3
150 to 299	39	34	19	1	7
300 or more	17	44	22	3	13
Metropolitan status					
City	23	48	16	4	9
Urban fringe	33	43	16	0	8
Town	28	43	17	3	10
Rural	22	47	18	12	0
Geographic region					
Northeast	35	34	17	5	8
Southeast	16	45	24	1	13
Central	23	54	13	1	9
West	28	50	13	2	6
Percent minority enrollment					
Less than 6 percent	31	48	14	1	7
6 to 20 percent	15	45	22	5	13
21 to 49 percent	26	52	15	3	4
50 percent or more	58	20	14	0	8

*Less than 0.5 percent.

NOTE: Percents in this table are based upon the number of schools having access to the Internet—25 percent of private schools. Percents may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 14.—Percent of private schools having access to the Internet, by the extent of wide area network use by members of the school community and by school characteristics: 1995

School characteristic	Members of the school community								
	Administrative staff			Teachers			Students		
	Not at all	Small extent	Moderate or large extent	Not at all	Small extent	Moderate or large extent	Not at all	Small extent	Moderate or large extent
All private schools	14	57	29	23	48	29	37	36	27
Affiliation									
Catholic	7	58	35	30	43	27	44	33	24
Other religious	22	60	17	22	55	23	41	39	21
Nonsectarian	18	52	31	8	50	43	14	41	45
Instructional level									
Elementary	12	54	33	32	43	25	42	35	23
Secondary	18	64	18	13	64	23	33	41	25
Combined	13	59	29	9	45	46	29	34	37
Size of enrollment									
Less than 150	9	69	22	24	45	31	44	29	27
150 to 299	12	52	36	35	42	24	44	33	22
300 or more	16	56	28	15	55	30	29	43	28
Metropolitan status									
City	13	61	26	20	50	31	32	39	29
Urban fringe	14	54	32	26	48	25	44	29	27
Town	10	54	35	31	40	29	42	41	17
Rural	57	43	0	0	77	23	22	43	35
Geographic region									
Northeast	10	70	20	27	50	23	43	35	22
Southeast	15	55	30	14	51	36	24	37	39
Central	13	52	35	24	42	34	34	44	22
West	18	50	32	25	50	25	42	29	28
Percent minority enrollment									
Less than 6 percent	17	53	30	33	43	24	40	32	27
6 to 20 percent	15	59	26	13	46	41	29	39	32
21 to 49 percent	8	66	26	15	63	22	34	47	19
50 percent or more	1	56	43	34	50	16	61	23	15

NOTE: Percents in this table are based upon the number of schools having access to the Internet—25 percent of private schools. Percents may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 15.—Percentage distribution of private schools by the types of Internet access that was available, by school characteristics: 1995

School characteristic	Type of access			
	None	Direct access	Access through other wide area networks	Both direct and through other wide area networks
All private schools	75	5	17	2
Affiliation				
Catholic	65	6	26	3
Other religious	84	4	11	2
Nonsectarian	68	9	18	5
Instructional level				
Elementary	77	4	17	2
Secondary	43	13	39	5
Combined	81	7	10	3
Size of enrollment				
Less than 150	87	3	8	1
150 to 299	73	5	20	2
300 or more	50	10	33	6
Metropolitan status				
City	68	6	22	3
Urban fringe	74	5	18	2
Town	78	5	15	2
Rural	96	3	1	*
Geographic region				
Northeast	72	6	20	2
Southeast	78	6	13	3
Central	77	5	16	2
West	74	5	19	3
Percent minority enrollment				
Less than 6 percent	76	4	18	3
6 to 20 percent	71	6	20	3
21 to 49 percent	71	7	19	2
50 percent or more	82	7	10	1

*Less than 0.5 percent.

NOTE: Percents may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 16.—Percent of private schools having access to the Internet, by type of wide area network connection and by school characteristics: 1995

School characteristic	Type of network connection				
	Modem	SLIP/PPP	56Kb	T1	ISDN
All private schools	94	16	2	2	3
Affiliation					
Catholic	95	14	2	1	2
Other religious	97	19	1	0	2
Nonsectarian	86	16	5	9	8
Instructional level					
Elementary	97	10	0	1	2
Secondary	89	23	5	1	4
Combined	91	25	6	5	6
Size of enrollment					
Less than 150	99	6	0	0	1
150 to 299	99	12	0	1	3
300 or more	88	25	6	4	5
Metropolitan status					
City	95	14	3	2	2
Urban fringe	94	20	1	2	7
Town	91	14	4	2	0
Rural	88	10	0	0	0
Geographic region					
Northeast	93	15	3	3	1
Southeast	95	22	1	2	3
Central	93	12	4	3	1
West	96	17	2	0	9
Percent minority enrollment					
Less than 6 percent	96	19	1	1	0
5 to 19 percent	90	16	2	5	5
21 to 49 percent	95	14	4	0	5
50 percent or more	95	7	4	0	9

NOTE: Percents in this table are based upon the number of schools having access to the Internet—25 percent of private schools. Percents do not sum to 100 because some schools reported more than one type of connection.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 17.—Percent of private schools having access to the Internet, by type of network administrator and by school characteristics: 1995

School characteristic	Type of network administrator		
	Full-time network administrator	Part-time network administrator	No single individual
All private schools	14	58	28
Affiliation			
Catholic	15	50	35
Other religious	11	73	16
Nonsectarian	18	56	26
Instructional level			
Elementary	11	55	34
Secondary	15	63	22
Combined	22	62	16
Size of enrollment			
Less than 150	16	60	24
150 to 299	13	53	34
300 or more	14	60	25
Metropolitan status			
City	15	55	30
Urban fringe	13	64	23
Town	16	56	28
Rural	0	67	33
Geographic region			
Northeast	16	58	26
Southeast	10	59	32
Central	11	57	32
West	19	59	22
Percent minority enrollment			
Less than 6 percent	9	61	30
6 to 20 percent	18	54	28
21 to 49 percent	24	48	27
50 percent or more	11	71	19

NOTE: Percents in this table are based upon the number of schools having access to the Internet—25 percent of private schools. Percents may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 18.—Percent of private schools that did not have access to the Internet in fall 1995 and their plans to obtain access to the Internet, by school characteristics: 1995

School characteristics	No current Internet access	Planning Internet access in future	Type of access planned			No plans for future Internet access
			Direct	Other WAN	Both	
All private schools	75	40	20	17	3	60
Affiliation						
Catholic	65	50	24	23	3	50
Other religious	84	34	17	14	3	66
Nonsectarian	68	38	21	16	1	62
Instructional level						
Elementary	77	41	20	19	2	59
Secondary	43	60	37	15	8	40
Combined	81	33	16	13	3	67
Size of enrollment						
Less than 150	87	31	17	12	1	69
150 to 299	73	45	20	23	2	55
300 or more	50	65	30	26	9	35
Metropolitan status						
City	68	44	24	17	3	56
Urban fringe	74	40	14	23	3	60
Town	78	41	25	15	1	59
Rural	96	27	16	9	3	73
Geographic region						
Northeast	72	40	20	18	1	60
Southeast	78	40	17	19	4	60
Central	77	37	18	15	4	63
West	74	43	24	18	2	57
Percent minority enrollment						
Less than 6 percent	76	37	19	16	2	63
6 to 20 percent	71	43	20	18	5	57
21 to 49 percent	71	37	22	12	3	63
50 percent or more	82	47	23	23	2	53

NOTE: Details may not sum to totals because of rounding. Estimates for private school plans to obtain access to the Internet are based upon only those schools that do not currently have Internet access—75 percent of private schools.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 19.—Percent of all private schools indicating the extent to which various factors were barriers to either the acquisition or the use of advanced telecommunications: 1995

Barrier	Minor or no barrier	Moderate barrier	Major barrier
Lack of or poor equipment	40	22	38
Inadequate hardware upkeep and repair	57	19	24
Too few telecommunication access points in building	47	16	36
Problems with telecommunications service provider	89	5	6
Lack of instructional software	62	20	19
Software too complicated to use	87	9	5
Lack of time in school schedule	57	26	17
Telecommunications links not easily accessible	65	14	21
Telecommunications equipment not easily accessible	55	17	28
Lack of technical support or advice	61	21	18
Lack of administrative support or initiative	82	11	7
Lack of or inadequately trained staff	56	23	21
Lack of teacher interest	77	18	6
Lack of teacher awareness regarding ways to integrate telecommunications into curriculum	53	30	17
Lack of student interest	95	4	1
Lack of parent or community interest	86	9	5
Not enough help for supervising student computer use	62	21	17
Concern about student access to inappropriate materials	56	19	25
Funds not specifically allocated for telecommunications	23	16	61
Variability of telecommunications rates from service providers	71	16	13
Use of advanced telecommunications does not fit with the educational policy of this school	86	5	9

NOTE: Percents may not sum to 100 because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 20.—Percent of private schools with Internet access indicating their major barriers to upgrading or maximizing the use of their advanced telecommunications, by school characteristics: Fall 1995

School characteristics	Funds not specifically allocated for telecommunications	Too few telecommunications access points in building	Lack of poor equipment	Concern about student access to inappropriate materials	Telecommunications equipment not easily accessible	Lack of teacher awareness regarding ways to integrate telecommunications into curriculum
All private schools	46	38	33	24	20	21
Affiliation						
Catholic	52	45	37	20	25	19
Other religious	45	32	31	29	13	19
Nonsectarian	32	29	23	24	18	30
Instructional level						
Elementary	49	42	36	23	24	20
Secondary	46	35	23	26	18	24
Combined	37	30	34	25	12	21
Size of enrollment						
Less than 150	48	22	39	33	14	19
150 to 299	53	45	30	20	24	25
300 or more	41	43	32	22	21	20
Metropolitan status						
City	46	37	39	22	22	20
Urban fringe	48	35	27	30	14	21
Town	41	42	22	17	28	24
Rural	67	70	55	36	27	32
Geographic region						
Northeast	52	42	34	30	17	25
Southeast	35	45	31	10	24	17
Central	49	36	38	25	22	23
West	44	31	26	25	20	18
Percent minority enrollment						
Less than 6 percent	52	46	34	28	25	27
6 to 20 percent	41	40	32	18	21	19
21 to 49 percent	34	19	25	15	8	13
50 percent or more	70	35	47	40	22	19

NOTE: Barriers do not sum to 100 percent since each school was asked to rate the extent to which each factor was a barrier to upgrading or maximizing the use of advanced telecommunications.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 21.—Percent of private schools that did not have Internet access indicating their major barriers to the acquisition of advanced telecommunications capabilities; by school characteristics: Fall 1995

School characteristics	Funds not specifically allocated for telecommunications	Lack of poor equipment	Too few telecommunications access points in building	Telecommunications equipment not easily accessible	Inadequate hardware upkeep and repair	Concern about student access to inappropriate materials
All private schools	66	40	36	30	27	26
Affiliation						
Catholic	72	47	44	32	29	19
Other religious	65	37	31	28	26	31
Nonsectarian	53	37	37	36	31	18
Instructional level						
Elementary	68	45	37	32	31	23
Secondary	54	49	35	24	26	16
Combined	62	28	34	28	19	35
Size of enrollment						
Less than 150	64	39	34	29	28	27
150 to 299	69	43	38	35	31	28
300 or more	68	40	41	27	18	18
Metropolitan status						
City	68	50	37	30	33	23
Urban fringe	68	45	44	37	31	23
Town	62	28	33	26	17	28
Rural	60	21	20	23	19	37
Geographic region						
Northeast	71	40	35	37	25	19
Southeast	66	40	40	27	30	28
Central	62	44	33	28	30	26
West	64	37	32	29	25	31
Percent minority enrollment						
Less than 6 percent	63	40	34	31	26	30
6 to 20 percent	64	32	27	32	22	26
21 to 49 percent	64	51	41	34	35	26
50 percent or more	79	53	38	23	36	17

NOTE: Barriers do not sum to 100 percent since each school was asked to rate the extent to which each factor was a barrier to their acquisition of advanced telecommunications capabilities.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

APPENDIX B

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Table 1a.—Standard errors of the percent of private schools having access to various types of computer networks: 1995

Type of computer network	Percent of schools having access to computer networks
Any type of computer network (i.e., local area network or wide area network)	1.8
Local area network only	1.3
Wide area network	1.5
Internet	1.4
Other wide area network with no access to Internet	0.7

NOTE: Details may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 2a.—Standard errors of the percent of private schools having access to selected telecommunications capabilities and the specific location of telecommunications within the school, by capability: 1995

Telecommunications capabilities	Percent of schools having access	Percent of schools reporting their telecommunications locations				
		Administrative offices	Teacher workrooms	Class-rooms	Computer labs	Library/ media centers
Computers connected to a local area network	1.6	2.6	1.9	3.1	2.3	2.3
Computer with modem	1.7	2.7	2.2	2.6	2.2	2.1
Computer with connection or access to a wide area network	1.5	3.4	1.9	3.2	3.1	3.0
Broadcast television	1.9	2.3	2.1	2.0	2.0	3.0
Cable television	1.8	2.7	2.5	2.5	2.9	3.0
Closed-circuit television	0.7	6.8	5.9	0.5	5.8	6.2
One-way video with two-way audio or computer link	1.0	4.3	4.8	8.3	9.8	7.6
Two-way video and audio	0.5	14.1	9.8	13.4	13.8	13.4

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 3a.—Standard errors of the percent of private schools having access to the Internet, by various types of Internet capabilities and for whom in the school community the capability is available: 1995

Internet capabilities	Available	Members of school community with access to capability		
		Administrative staff	Teachers	Students
E-mail	1.6	2.2	3.3	3.4
News groups	3.7	3.4	3.3	4.2
Resource location services (e.g., Gopher, Archie, Veronica, etc.)	3.5	3.8	3.3	3.8
World Wide Web Access (e.g., Browsers, such as Netscape, MOSAIC)	3.2	3.3	2.5	3.5

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 4a.—Standard errors of the percent of private schools reporting the extent of the formal role that various groups had in developing the school's advanced telecommunications activities: 1995

Various groups	Small or no extent	Moderate extent	Large extent
Students	1.4	1.2	0.7
Teachers/staff	1.6	1.6	1.9
Parents	2.0	1.8	1.7
State associations	0.9	0.8	0.4
Regional associations	1.0	1.0	0.5
National associations	0.9	0.8	0.3
Business leaders	1.1	1.0	0.6
Institutions of higher education	1.1	1.1	0.6
Other community organizations	1.2	1.0	0.4

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 5a.—Standard errors of the percent of schools and instructional rooms with Internet access, and the number of instructional rooms with access to the Internet in schools with Internet access, by school type: 1995

Type of school	Percent with Internet access		Number of instructional rooms with Internet access				
	Schools	Instructional rooms	0 rooms	1 room	2-3 rooms	4 rooms	5 or more rooms
Private	1.4	0.6	3.1	3.4	2.2	0.8	1.8
Public	1.8	0.9	1.1	2.6	1.8	1.2	2.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunicationsin U.S. Private Schools, K-12," FRSS 56, 1995; and "Survey on Advanced Telecommunicationsin Public Schools, K-12," FRSS 57, 1995.

Table 6a.—Standard errors of the mean number of computers and percent of computers with Internet access in private and public schools: 1995

Type of school	Mean number of computers	Percent of computers with Internet access
Private	0.6	0.9
Public	1.7	1.4

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunicationsin U.S. Private Schools, K-12," FRSS 56, 1995; and "Survey on Advanced Telecommunicationsin Public Schools, K-12," FRSS 57, 1995.

Table 7a.—Standard errors of the percent of private and public schools with computer networks: 1995

Type of network	School type	
	Private	Public
Any network	1.8	1.4
Local area network	1.3	1.6
Wide area network	1.5	2.0
Internet	1.4	1.8
Other wide area network with no access to Internet	0.7	1.3

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunicationsin U.S. Private Schools, K-12," FRSS 56, 1995; and "Survey on Advanced Telecommunicationsin U.S. Public Schools, K-12," FRSS 57, 1995.

Table 8a.—Standard errors of the percent of private and public schools having access to the Internet, by the extent of wide area network use by various members of the school community: 1995

Type of school	Administrative staff			Teachers			Students		
	Not at all	Small extent	Moderate or large extent	Not at all	Small extent	Moderate or large extent	Not at all	Small extent	Moderate or large extent
Private.....	2.1	3.2	3.0	2.9	3.4	3.2	3.2	3.1	2.9
Public.....	2.0	2.4	1.9	1.6	2.3	2.2	2.6	2.6	2.2

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995; and "Survey on Advanced Telecommunicationsin U.S. Public Schools, K-12," FRSS 57, 1995.

Table 10a.—Standard errors of the mean number of computers in private schools, the ratios of private school students to computers and to computers with Internet access, by school characteristics: 1995

School characteristic	Mean number of computers	Number of students per computer	Number of students per computer with Internet access
All private schools	0.6	0.2	10.6
Affiliation			
Catholic	0.9	0.3	33.5
Other religious	0.8	0.4	49.0
Nonsectarian	2.5	0.4	4.6
Instructional level			
Elementary	0.5	0.2	39.4
Secondary	3.7	0.3	11.9
Combined	1.7	0.4	10.0
Size of enrollment			
Less than 150	0.5	0.3	56.0
150 to 299	0.9	0.3	62.0
300 or more	2.0	0.3	9.9
Metropolitan status			
City	1.4	0.3	16.7
Urban fringe	1.4	0.3	30.0
Town	1.6	0.5	21.8
Rural	1.2	0.8	42.5
Geographic region			
Northeast	1.7	0.5	26.7
Southeast	1.7	0.5	29.9
Central	1.5	0.4	20.9
West	1.5	0.4	28.9
Percent minority enrollment			
Less than 6 percent	1.1	0.4	32.8
6 to 20 percent	2.3	0.4	10.8
21 to 49 percent	1.9	0.4	38.5
50 percent or more	1.5	0.7	64.8

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 11a.—Standard errors of the percent of private schools having access to the Internet, percent of private school students attending schools with Internet access, and the percent of instructional rooms and computers with Internet access in private schools, by school characteristics: 1995

School characteristic	Percent of schools having access to the Internet	Percent of private school students attending schools with Internet access	Percent of all instructional rooms across the country with Internet access	Percent of private school computers with Internet access
All private schools	1.4	1.9	0.6	0.9
Affiliation				
Catholic	2.7	2.5	0.9	1.0
Other religious	2.1	3.1	0.5	1.2
Nonsectarian	3.1	5.0	2.6	3.4
Instructional level				
Elementary	2.0	2.7	0.5	0.8
Secondary	4.7	4.0	0.8	1.4
Combined	2.6	3.4	1.9	2.8
Size of enrollment				
Less than 150	1.9	2.3	0.4	1.6
150 to 299	3.0	3.0	0.8	1.0
300 or more	3.0	2.8	1.2	1.5
Metropolitan status				
City	2.5	3.0	1.1	1.7
Urban fringe	2.8	3.3	0.9	1.3
Town	3.6	4.2	2.0	3.0
Rural	1.6	7.3	0.3	2.1
Geographic region				
Northeast	3.3	3.2	1.2	1.5
Southeast	3.1	5.2	1.8	2.8
Central	3.6	3.4	1.6	2.5
West	1.6	3.8	0.6	1.4
Percent minority enrollment				
Less than 6 percent	2.7	3.4	0.6	1.3
6 to 20 percent	2.9	3.3	1.7	2.1
21 to 49 percent	4.4	5.8	0.8	1.4
50 percent or more	4.0	4.4	0.6	1.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 12a.—Standard errors of the percentage distribution of private schools having access to the Internet by the number of computers with Internet access and by the mean number of computers with Internet access, by school characteristics: 1995

School characteristic	Number of computers with Internet access				Mean number of computers with Internet access
	1 computer	2-5 computers	6-9 computers	10 or more computers	
All private schools	3.5	3.0	2.0	2.1	1.0
Affiliation					
Catholic	3.9	4.4	1.4	2.5	0.8
Other religious	6.4	4.5	5.4	3.5	1.3
Nonsectarian	7.6	7.4	3.6	6.5	4.6
Instructional level					
Elementary	4.8	4.5	2.2	2.6	0.7
Secondary	7.0	5.7	1.7	3.4	1.4
Combined	8.6	6.1	6.7	5.8	4.6
Size of enrollment					
Less than 150	8.9	5.4	5.9	5.4	1.3
150 to 299	6.3	5.2	3.8	3.4	0.8
300 or more	3.4	3.9	1.6	2.9	2.0
Metropolitan status					
City	5.2	4.7	1.1	2.9	1.6
Urban fringe	6.2	5.1	3.4	3.8	1.3
Town	8.9	5.8	8.9	4.5	2.7
Rural	20.9	22.1	0.0	10.1	4.8
Geographic region					
Northeast	6.5	6.1	1.8	4.0	1.5
Southeast	8.0	8.8	5.9	6.2	2.9
Central	5.9	4.4	3.0	3.6	2.9
West	6.3	5.4	5.7	4.5	1.0
Percent minority enrollment					
Less than 6 percent	5.3	4.5	2.2	3.3	1.2
6 to 20 percent	5.3	4.7	3.5	4.2	2.6
21 to 49 percent	9.8	8.3	7.8	4.4	1.3
50 percent or more	10.8	9.1	5.2	4.0	1.3

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 13a.—Standard errors of the percentage distribution of private schools having access to the Internet by the number of instructional rooms with Internet access, by school characteristics: 1995

School characteristic	Number of instructional rooms with Internet access				
	0 rooms	1 room	2-3 rooms	4 rooms	5 or more rooms
All private schools	3.1	3.4	2.2	0.8	1.8
Affiliation					
Catholic	4.5	4.7	3.1	(—)	2.3
Other religious	7.2	7.4	3.7	1.0	2.5
Nonsectarian	3.4	7.2	4.7	4.1	4.3
Instructional level					
Elementary	4.6	5.4	3.1	0.6	2.3
Secondary	4.1	6.4	4.5	1.3	2.7
Combined	8.0	8.8	6.2	3.7	4.4
Size of enrollment					
Less than 150	8.6	10.1	2.9	2.7	1.8
150 to 299	6.6	6.1	4.8	1.1	3.8
300 or more	2.9	4.0	3.2	1.0	2.6
Metropolitan status					
City	4.1	5.6	3.0	1.6	2.1
Urban fringe	6.7	5.4	4.0	0.0	2.8
Town	8.8	8.9	6.0	1.3	4.8
Rural	23.0	21.4	16.6	10.1	0.0
Geographic region					
Northeast	6.2	5.9	3.8	2.5	2.7
Southeast	6.5	8.7	7.6	1.0	5.7
Central	5.3	7.0	4.0	1.0	3.1
West	5.7	6.2	3.7	1.3	3.0
Percent minority enrollment					
Less than 6 percent	4.3	4.3	3.1	0.6	2.8
6 to 20 percent	4.3	5.8	4.5	2.5	2.9
21 to 49 percent	8.2	10.0	5.0	1.6	3.6
50 percent or more	12.2	7.7	7.5	0.0	3.5

(—) Estimate of standard error is not derived because it is based on a statistic estimated at less than 0.5 percent.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 14a.—Standard errors of the percent of private schools having access to the Internet, by the extent of wide area network use by members of the school community and by school characteristics: 1995

School characteristic	Members of the school community								
	Administrative staff			Teachers			Students		
	Not at all	Small extent	Moderate or large extent	Not at all	Small extent	Moderate or large extent	Not at all	Small extent	Moderate or large extent
All private schools	2.1	3.2	3.0	2.9	3.4	3.2	3.1	3.1	2.9
Affiliation									
Catholic	1.8	4.0	4.0	4.4	4.9	4.5	4.0	4.4	4.0
Other religious	4.8	6.8	5.8	5.5	7.2	6.7	7.7	6.7	6.1
Nonsectarian	5.8	6.6	5.9	4.4	6.4	6.2	5.0	6.3	6.3
Instructional level									
Elementary	3.3	4.2	4.4	4.8	4.7	4.1	4.5	4.7	3.8
Secondary	3.4	4.3	3.4	4.1	4.8	3.6	6.2	5.7	4.5
Combined	4.5	8.4	7.3	3.6	8.7	8.4	8.7	7.1	7.7
Size of enrollment									
Less than 150	4.7	8.7	7.5	7.6	9.8	8.7	10.0	9.0	8.0
150 to 299	3.9	6.1	6.1	6.5	6.2	5.6	6.6	5.6	5.6
300 or more	2.8	4.4	3.8	2.6	4.0	3.6	3.4	4.3	3.0
Metropolitan status									
City	3.0	4.1	2.9	3.6	4.3	4.2	4.7	4.2	4.5
Urban fringe	4.7	7.1	6.9	6.2	6.7	5.5	6.6	5.5	5.6
Town	4.5	9.9	9.7	8.8	8.4	9.0	9.8	8.1	8.3
Rural	22.3	22.3	0.0	0.0	14.8	14.8	23.0	21.1	20.3
Geographic region									
Northeast	3.1	5.1	5.0	5.3	6.2	4.5	6.5	6.0	4.6
Southeast	4.8	8.7	8.3	5.9	7.0	7.0	7.0	8.8	9.2
Central	4.0	6.6	6.1	5.0	7.5	6.6	4.4	6.4	4.6
West	5.5	7.1	6.1	6.4	7.4	6.5	5.9	5.0	6.1
Percent minority enrollment									
Less than 6 percent	3.9	5.6	5.1	4.4	4.2	4.7	5.4	5.0	5.6
6 to 20 percent	3.2	4.8	3.8	3.7	5.5	5.4	4.2	5.6	4.7
21 to 49 percent	3.5	8.3	7.9	5.5	7.6	7.3	9.5	7.8	5.7
50 percent or more	1.2	12.9	12.5	12.7	14.1	6.9	11.6	9.8	5.8

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 15a.—Standard errors of the percentage distribution of private schools by the types of Internet access that was available, by school characteristics: 1995

School characteristic	Type of access			
	None	Direct access	Access through other wide area networks	Both direct and through other wide area networks
All private schools	1.4	0.7	1.4	0.5
Affiliation				
Catholic	2.7	1.4	2.3	0.8
Other religious	2.1	1.0	1.9	0.8
Nonsectarian	3.1	1.6	3.2	1.5
Instructional level				
Elementary	2.0	0.9	1.9	0.5
Secondary	4.7	2.2	4.9	1.4
Combined	2.6	1.8	2.1	1.5
Size of enrollment				
Less than 150	1.9	1.1	1.7	0.7
150 to 299	3.0	1.5	3.0	1.0
300 or more	3.0	1.7	2.7	1.2
Metropolitan status				
City	2.5	1.2	2.0	0.8
Urban fringe	2.8	1.6	2.5	0.9
Town	3.6	1.4	3.2	1.7
Rural	1.6	1.4	0.9	(-)
Geographic region				
Northeast	3.3	1.9	3.3	0.8
Southeast	3.1	1.7	2.5	1.4
Central	2.5	1.2	2.4	0.7
West	3.1	1.3	2.8	1.3
Percent minority enrollment*				
Less than 6 percent	2.7	0.9	2.5	1.0
6 to 20 percent	2.9	1.3	2.6	1.0
21 to 49 percent	4.4	2.1	3.8	1.2
50 percent or more	4.0	3.1	2.9	0.7

(-) Estimate of standard error is not derived because it is based on a statistic estimated at less than 0.5 percent.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 16a.—Standard errors of the percent of private schools having access to the Internet, by type of wide area network connection and by school characteristics: 1995

School characteristic	Type of network connection				
	Modem	SLIP/PPP	56Kb	T1	ISDN
All private schools	1.1	2.6	0.7	0.6	0.9
Affiliation					
Catholic	1.5	2.9	1.1	0.6	1.3
Other religious	1.5	5.1	0.9	(-)	1.3
Nonsectarian	3.6	3.7	2.0	3.1	3.0
Instructional level					
Elementary	1.2	3.2	(-)	0.8	1.2
Secondary	2.5	3.3	1.7	0.5	1.5
Combined	3.4	7.9	2.8	2.2	2.7
Size of enrollment					
Less than 150	1.0	5.0	(-)	(-)	0.9
150 to 299	1.1	5.1	(-)	1.1	2.2
300 or more	2.4	3.0	1.7	1.2	1.3
Metropolitan status					
City	1.3	2.8	1.0	0.7	0.8
Urban fringe	1.7	5.4	0.6	1.3	2.7
Town	3.8	7.4	2.7	1.9	(-)
Rural	10.1	7.8	(-)	(-)	(-)
Geographic region					
Northeast	2.4	3.6	1.3	1.6	0.7
Southeast	2.5	6.0	1.0	1.3	1.6
Central	2.3	3.5	1.8	1.4	0.7
West	1.7	5.8	0.8	(-)	3.1
Percent minority enrollment					
Less than 6 percent	1.3	4.0	0.6	0.4	(-)
5 to 19 percent	2.5	3.7	1.5	1.9	1.7
21 to 49 percent	2.3	5.9	2.0	0.5	3.7
50 percent or more	3.0	3.2	2.1	(-)	4.9

(-) Estimate of standard error is not derived because it is based on a statistics estimated at less than 0.5 percent.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 17a.—Standard errors of the percent of private schools having access to the Internet, by type of network administrator and by school characteristics: 1995

School characteristic	Type of network administrator		
	Full-time network administrator	Part-time network administrator	No single individual
All private schools	2.2	3.1	2.4
Affiliation			
Catholic	2.7	3.8	3.6
Other religious	4.3	6.4	5.2
Nonsectarian	6.0	6.7	6.6
Instructional level			
Elementary	2.6	4.2	3.9
Secondary	3.2	5.0	4.7
Combined	7.1	7.3	5.2
Size of enrollment			
Less than 150	6.8	9.3	8.3
150 to 299	3.9	5.8	6.6
300 or more	2.4	3.7	3.4
Metropolitan status			
City	3.3	3.8	4.1
Urban fringe	4.3	5.9	4.8
Town	7.8	9.3	8.0
Rural	(-)19.6	19.6	
Geographic region			
Northeast	4.4	7.2	5.5
Southeast	4.4	8.9	8.9
Central	3.1	6.2	5.3
West	5.6	6.7	5.5
Percent minority enrollment			
Less than 6 percent	2.9	5.4	4.5
6 to 20 percent	4.8	6.0	5.3
21 to 49 percent	8.1	7.8	8.3
50 percent or more	6.7	12.0	8.3

(-) Estimate of standard error is not derived because it is based on a statistic estimated at less than 0.5 percent.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 18a.—Standard errors of the percent of private schools that did not have access to the Internet in fall 1995 and their plans to obtain access to the Internet, by school characteristics: 1995

School characteristics	No current Internet access	Planning Internet access in future	Type of access planned			No plans for future Internet access
			Direct	Other WAN	Both	
All private schools	1.4	1.9	1.7	1.6	0.7	1.9
Affiliation						
Catholic	2.7	3.5	3.2	3.0	1.2	3.5
Other religious	2.1	3.4	2.9	2.1	1.0	3.4
Nonsectarian	3.1	5.7	4.4	3.6	0.7	5.7
Instructional level						
Elementary	2.0	2.1	2.1	1.9	0.8	2.1
Secondary	4.7	7.6	8.9	4.6	2.8	7.6
Combined	2.6	4.9	3.8	3.1	1.5	4.9
Size of enrollment						
Less than 150	1.9	3.1	2.7	2.1	0.8	3.1
150 to 299	3.0	3.9	3.0	3.2	1.0	3.9
300 or more	3.0	4.8	4.7	4.0	3.1	4.8
Metropolitan status						
City	2.5	3.8	3.3	2.7	1.1	3.8
Urban fringe	2.8	3.7	2.9	3.2	1.2	3.7
Town	3.6	5.9	5.4	3.5	0.7	5.9
Rural	1.6	7.5	5.6	4.0	2.6	7.5
Geographic region						
Northeast	3.3	3.8	3.6	3.6	0.5	3.8
Southeast	3.1	5.3	3.6	3.9	1.5	5.3
Central	2.5	4.1	3.4	2.7	1.8	4.1
West	3.1	5.3	4.0	3.9	0.8	5.3
Percent minority enrollment						
Less than 6 percent	2.7	3.0	2.6	2.3	0.8	3.0
6 to 20 percent	2.9	4.9	4.0	3.0	2.0	4.9
21 to 49 percent	4.4	6.0	5.1	4.4	1.4	6.0
50 percent or more	4.0	6.6	4.9	4.9	0.9	6.6

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 19a.—Standard errors of the percent of all private schools indicating the extent to which various factors were barriers to either the acquisition or the use of advanced telecommunications: 1995

Barrier	Minor or no barrier	Moderate barrier	Major barrier
Lack of or poor equipment	2.2	1.5	2.0
Inadequate hardware upkeep and repair	2.0	1.5	2.0
Too few telecommunication access points in building	1.9	1.3	2.1
Problems with telecommunications service provider	1.2	0.7	1.0
Lack of instructional software	1.8	1.6	1.8
Software too complicated to use	1.4	1.2	1.1
Lack of time in school schedule	2.2	1.6	1.4
Telecommunications links not easily accessible	2.3	1.6	1.9
Telecommunications equipment not easily accessible	2.5	1.7	2.1
Lack of technical support or advice	1.9	1.8	1.6
Lack of administrative support or initiative	1.6	1.2	1.2
Lack of or inadequately trained staff	1.5	1.6	1.7
Lack of teacher interest	1.6	1.3	1.0
Lack of teacher awareness regarding ways to integrate telecommunications into curriculum	1.7	1.8	1.3
Lack of student interest	1.1	0.9	0.5
Lack of parent or community interest	1.5	1.1	1.1
Not enough help for supervising student computer use	1.7	1.5	1.4
Concern about student access to inappropriate materials	2.3	1.8	1.9
Funds not specifically allocated for telecommunications	1.7	1.4	1.8
Variability of telecommunications rates from service providers	1.7	1.3	1.5
Use of advanced telecommunications does not fit with the educational policy of this school	1.8	0.9	1.3

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 20a.—Standard errors of the percent of private schools with Internet access indicating their major barriers to upgrading or maximizing the use of their advanced telecommunications, by school characteristics: Fall 1995

School characteristics	Funds not specifically allocated for telecommunications	Too few telecommunications access points in building	Lack of poor equipment	Concern about student access to inappropriate materials	Telecommunications equipment not easily accessible	Lack of teacher awareness regarding ways to integrate telecommunications into curriculum
All private schools	3.7	3.4	3.4	2.8	2.4	2.6
Affiliation						
Catholic	5.0	4.8	4.6	4.1	3.7	3.7
Other religious	7.9	5.9	7.9	7.8	3.7	5.2
Nonsectarian	6.8	6.5	6.1	6.3	6.1	5.7
Instructional level						
Elementary	5.1	4.5	4.9	3.8	4.0	3.8
Secondary	5.9	4.9	3.9	7.0	3.0	4.7
Combined	7.8	7.2	8.0	7.6	4.0	5.8
Size of enrollment						
Less than 150	10.6	6.2	9.8	8.9	5.5	5.9
150 to 299	6.7	5.8	6.0	5.0	5.8	6.2
300 or more	4.2	3.7	3.2	3.2	2.9	2.6
Metropolitan status						
City	4.3	5.3	4.8	3.4	3.7	2.9
Urban fringe	6.6	5.9	6.2	6.3	3.2	5.2
Town	9.9	9.0	7.0	5.5	7.4	7.8
Rural	17.3	16.5	20.0	22.4	19.5	19.9
Geographic region						
Northeast	6.2	6.1	7.4	6.7	4.9	6.2
Southeast	7.6	7.9	6.5	4.8	6.6	5.5
Central	8.1	6.9	6.6	4.7	5.4	5.8
West	7.2	6.7	5.8	5.3	5.2	4.7
Percent minority enrollment						
Less than 6 percent	5.7	6.1	6.3	4.9	5.4	5.4
6 to 20 percent	6.1	4.8	4.7	3.6	3.9	4.2
21 to 49 percent	8.6	6.4	9.0	5.9	3.1	4.4
50 percent or more	9.8	11.9	14.1	14.8	10.5	8.5

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

Table 21a.—Standard errors of the percent of private schools that did not have Internet access indicating their major barriers to the acquisition of advanced telecommunications capabilities; by school characteristics: Fall 1995

School characteristics	Funds not specifically allocated for telecommunications	Lack of poor equipment	Too few telecommunications access points in building	Telecommunications equipment not easily accessible	Inadequate hardware upkeep and repair	Concern about student access to inappropriate materials
All private schools	2.3	2.3	2.4	2.5	2.3	2.2
Affiliation						
Catholic	3.4	4.0	3.9	4.2	3.4	3.0
Other religious	3.5	3.6	3.2	3.5	3.1	3.5
Nonsectarian	5.7	6.4	5.8	5.0	5.3	4.3
Instructional level						
Elementary	2.7	3.1	2.7	2.9	3.0	2.6
Secondary	7.6	6.4	6.4	5.2	6.0	5.0
Combined	4.6	4.4	4.6	4.8	3.8	4.0
Size of enrollment						
Less than 150	3.5	3.6	3.7	3.2	3.5	3.5
150 to 299	4.0	3.8	3.7	4.1	3.9	4.2
300 or more	4.1	4.3	4.5	3.8	3.0	3.5
Metropolitan status						
City	4.0	3.8	3.8	4.0	3.9	2.8
Urban fringe	3.6	3.9	4.2	4.6	3.8	4.1
Town	4.9	4.6	6.4	4.6	4.0	4.9
Rural	8.1	5.7	7.0	5.8	6.0	8.9
Geographic region						
Northeast	4.2	4.6	4.6	5.0	4.3	3.4
Southeast	5.2	5.2	5.8	4.7	5.2	5.7
Central	4.9	5.7	4.7	5.2	5.0	4.8
West	5.6	4.4	5.0	5.1	4.5	5.0
Percent minority enrollment						
Less than 6 percent	3.9	3.8	3.7	3.9	3.4	4.1
6 to 20 percent	4.4	3.5	3.9	4.0	4.0	4.8
21 to 49 percent	5.7	6.1	5.7	6.6	6.2	6.4
50 percent or more	5.4	6.7	6.3	6.3	6.6	3.8

SOURCE: U.S. Department of Education, National Center for Education Statistics, Fast Response Survey System, "Survey on Advanced Telecommunications in U.S. Private Schools, K-12," FRSS 56, 1995.

APPENDIX C

SURVEY INSTRUMENT

*U.S. Government Printing Office: 1997 - 427-489/70404

U.S. DEPARTMENT OF EDUCATION
NATIONAL CENTER FOR EDUCATION STATISTICS
WASHINGTON, D.C. 20208-5651

ADVANCED TELECOMMUNICATIONS IN U.S. PRIVATE SCHOOLS, K-12

FAST RESPONSE SURVEY SYSTEM

FORM APPROVED
O.M.B. NO.: 00706
EXPIRATION DATE: 12/31/95

This survey is authorized by law (20 U.S.C. 1221e-1). While you are not required to respond, your cooperation is needed to make the results of this survey comprehensive, accurate, and timely.

DEFINITIONS

Advanced telecommunications- refers to modes of communication used to transmit information from one place to another including broadcast and interactive television, networked computers, etc.

Broadcast television - refers to network television such as NBC, CBS, etc.

Cable television - refers to subscription television such as CNN, Learning Channel, Discovery, etc.

Closed-circuit television - refers to the transmission of television on noncommercial lines (e.g., inhouse broadcast).

E-mail (Electronic mail) - refers to text messages transmitted across networks and usually accessible only by the addressee.

56Kb - a digital transmission speed of 56 Kilo (thousand) bits per second.

Instructional rooms - refers to rooms in the school building used for any instructional purposes (includes classrooms, labs, media centers, art rooms, rooms used for vocational or special education, etc.).

Internet - refers to a network of networks all running the TCP/IP protocols, sharing the same underlying network address space as well as the same domain name space, and interconnected into a network of information.

ISDN (Integrated Services Digital Network) - refers to data communication that integrates voice and data.

Local area network - refers to the linkage of computers and/or peripherals (e.g., printer) confined to a limited area that may consist of a room, building, or campus that allows users to communicate and share information.

Modem - a device which connects between a computer and a phone line to translate between the digital signal of the computer and the analog signal required for telephone transmission.

Newsgroups - electronic conferences/discussion groups similar to mailists. Newsgroup messages, called articles, are not mailed to a subscriber's e-mailbox but are distributed to a subscribing system's news server. The single copy is then accessed by all users on their network-connected machines. Each newsgroup focuses on a subject area.

One-way video with two-way audio or two-way computer link - refers to the ability to transmit or receive picture in one direction with the capability to communicate in two directions (interactively) via computer or some audio method.

SLIP (Serial Line Internet Protocol) - refers to a protocol that allows a computer to use TCP/IP (Internet) protocol using serial lines such as dial-up telephone lines. See PPP.

PPP (Point to Point Protocol) - refers to a protocol that allows a computer to use the TCP/IP (Internet) protocols (and become a full-fledged Internet member) with a standard telephone line and a high speed modem. See SLIP.

T1 rate - refers to a digital transmission speed of 1.544 Megg (million) bits per second.

Two-way video and audio - refers to the ability to transmit and receive pictures and sound simultaneously in real time.

Wide area network- refers to a data communications linkage designed to connect computers over distances greater than the distance transmitted by local area networks (e.g., building to building, city to city, across the country, or internationally), that allows users to communicate and share information.

World Wide Web (WWW) - refers to a system that allows access to information sites all over the world using a standard, common interface called hypertex to organize and search information. It simplifies the process of finding a site, connecting, locating the appropriate documents and downloading the information through the use of a browser (e.g., Netscape, MOSAIC).

AFFIX LABEL HERE

IF ABOVE INFORMATION IS INCORRECT, PLEASE MAKE CORRECTIONS DIRECTLY ON LABEL.

Name of person completing form:_____ Telephone:_____

Title/position: _____ Number of years at this school:_____

Best days and times to reach you (in case of questions): _____ E-mail: _____

PLEASE RETURN COMPLETED FORM TO:

WESTAT
1650 Research Boulevard
Rockville, Maryland 20850
Attention: 900181-Heaviside

IF YOU HAVE ANY QUESTIONS, CONTACT:

Sheila Heaviside
800-937-8281, ext. 8391
Fax: 301-294-3992
E:mail: HEAVISS1@westat.com

The time required to complete this information collection is estimated to average 30 minutes per response, including the time to review instructions, search existing data resources, gather and maintain the data needed, and complete and review the information collection. **If you have any comments concerning the accuracy of the time estimate(s) or suggestions for improving this form, please write to**: U.S. Department of Education, Washington, DC 20202-4651.

FRSS Form No. 56, 10/95

PLEASE REFER TO DEFINITIONS ON COVER PAGE FOR WORDS IN ITALICS.

I. Telecommunications

1a. For what grade levels does this school offer instruction? From _____ (lowest grade) to _____ (highest grade).

1b. What is the total number of instructional rooms in this school? Include all rooms used for any instructional purposes (including classrooms, computer and other labs, media centers, etc.). _____ Total instructional rooms

2. What is the total number of computers in this school? _____ Total computers

3. Please indicate whether or not each type of equipment or service is available at this school, and where in the school it is located. Then provide the number of instructional rooms (include classrooms, computer and other labs, media centers, etc.) in which the equipment/service is available. *(Circle yes or no or enter appropriate response in each column for each item.)*

Equipment or service	1 Available at school	2 In administrative offices?	3 In teacher workrooms?	4 In classrooms?	5 In computer labs?	6 In Library/media centers?	7 Total number of *instructional rooms* with service (Columns 4-6)
a. Computers connected to a *local area network*	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	_____
b. Computer with modem	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	_____
c. Computer with connection or access to a *wide area network*	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	_____
d. *Broadcast television*	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	_____
e. *Cable television*	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	_____
f. *Closed-circuit television*	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	_____
g. *One-way video with two-way audio or computer link*	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	
h. *Two-way video and audio*	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No	_____

If you answered no to question 3a, column 1, check here and skip to question 5a. ❑ *No local area network.*

II. Local Area Networking Capabilities

4. Does your *local area network* connect any of the following for instructional and/or administrative purposes? *(Circle all that apply.)*

	Purpose		
	Administrative purposes	**Instructional purposes**	**Neither**
a. Computers to a shared printer or other peripherals (e.g., CD-ROM reader) for	1	2	3
b. Computers within the same room for	1	2	3
c. Computers in different rooms in your school building or on your school campus for	1	2	3
d. Computers in your school with a regional, national, or international network for	1	2	3

III. Wide Area Networking Capabilities

5a. What type of access to the Internet does this school have? *(Circle one.)*

No access to the Internet	1	
Direct access to the Internet	2	*(Skip to question 6)*
Access to the Internet through another wide area network (e.g., America Online, Prodigy, CONNECT, etc.)	3	*(Skip to question 6)*
Both direct access to the Internet and access through another wide area network	4	*(Skip to question 6)*

5b. Does this school have plans to obtain access to the Internet? *(Circle one.)*

Yes, direct access to the Internet is planned	1	*(Skip to question 5c)*
Yes, access through another wide area network (e.g., America Online, Prodigy, CompuServe, CONNECT, etc.) is planned	2	*(Skip to question 5c)*
Yes, both direct access to the Internet and access through another wide area network is planned	3	*(Skip to question 5c)*
No	4	*(Skip to question 12)*

5c. If yes, by what year do you expect to obtain access to the Internet? 19_____ *(Skip to question 12)*

6. Which of the following Internet resources or capabilities does your school have and who in your school has access to each? *(Circle all that apply.)*

Resource/capability	Not available	Available for administrative staff	Available for teachers	Available for students
a. E-mail	1	2	3	4
b. News groups	1	2	3	4
c. Resource location services (e.g., Gopher, Archie, Veronica, etc.)	1	2	3	4
d. World Wide Web Access (e.g., Browsers such as Netscape, MOSAIC)	1	2	3	4
e. Other (*specify*) _____	1	2	3	4

7a. How many computers in this school have access to the Internet? _____ Computers

7b. How many rooms used for instructional purposes (include classrooms, labs and media centers, etc.) have a computer with access to the Internet? _____ Rooms

8. How does your school connect to *wide area networks* (e.g., Internet, America Online, Prodigy, CompuServe, CONNECT, etc.)? *(Circle all that apply.)*

Modem	1	T1	4
SLIP/PPP connection	2	ISDN	5
56Kb	3	Other (*specify*) _____	6

9. Who has responsibility for administering the *wide area network* in your school? (*Circle one.*)

A full-time network administrator (staff member whose primary responsibility is network administration)	1
A staff member with part-time responsibility for administering the network	2
No single individual	3

10. To what extent do administrative staff, teachers, and students use *wide area networks* (e.g., Internet, America Online, Prodigy, CompuServe, CONNECT etc.) in your school? *(Circle one for each item.)*

	Use wide area networks			
	Not at all	**Small extent**	**Moderate extent**	**Large extent**
a. Administrative staff	1	2	3	4
b. Teachers	1	2	3	4
c. Students	1	2	3	4

11. Which of the following possible restrictions involving student access to *wide area networks* (e.g., Internet, America Online, Prodigy, CompuServe, CONNECT, etc.), apply in your school? *(Circle all that apply.)*

a. No students have access 1
b. All students have access 2
c. Network access is restricted to specific grades 3
d. Network access is restricted to those students currently enrolled in or having completed a computer course 4
e. Network access is restricted to students in specific programs (e.g., gifted and talented, honors, advanced placement, remedial, etc.) 5
f. Other *(specify)* _____ 6

12. To what extent do each of the following groups have a formal role in developing your school's *advanced telecommunications* activities? *(Circle one for each item.)*

	Not at all	Small extent	Moderate extent	Large extent
a. Students	1	2	3	4
b. Teachers/Staff	1	2	3	4
c. Parents	1	2	3	4
d. State associations	1	2	3	4
e. Regional associations	1	2	3	4
f. National associations	1	2	3	4
g. Business leaders	1	2	3	4
h. Institutions of higher education	1	2	3	4
i. Other community organizations (e.g., libraries)	1	2	3	4
j. Other (*specify*) _____	1	2	3	4

IV. Barriers

13. Please indicate to what extent, if any, each of the following are barriers to your school's acquisition or usage of *advanced telecommunications* capabilities. If your school is currently using *advanced telecommunications*, please indicate to what extent the following are barriers to upgrading or maximizing telecommunications usage. *(Circle one for each item.)*

	Not a barrier	Minor barrier	Moderate barrier	Major barrier
a. Lack of or poor equipment	1	2	3	4
b. Inadequate hardware upkeep and repair	1	2	3	4
c. Too few telecommunication access points in building	1	2	3	4
d. Problems with telecommunications service provider	1	2	3	4
e. Lack of instructional software	1	2	3	4
f. Software too complicated to use	1	2	3	4
g. Lack of time in school schedule	1	2	3	4
h. Telecommunications links not easily accessible	1	2	3	4
i. Telecommunications equipment not easily accessible	1	2	3	4
j. Lack of technical support or advice	1	2	3	4
k. Lack of administrative support or initiative	1	2	3	4
l. Lack of or inadequately trained staff	1	2	3	4
m. Lack of teacher interest	1	2	3	4
n. Lack of teacher awareness regarding ways to integrate telecommunications into curriculum	1	2	3	4
o. Lack of student interest	1	2	3	4
p. Lack of parent or community interest	1	2	3	4
q. Not enough help for supervising student computer use	1	2	3	4
r. Concern about student access to inappropriate materials	1	2	3	4
s. Funds not specifically allocated for telecommunications	1	2	3	4
t. Variability of telecommunications rates from service providers	1	2	3	4
u. Use of *advanced telecommunications* does not fit with the educational policy of this school	1	2	3	4

14. In what year was this school built? 19_____

15. When was the last major renovation? 19_____

16. Did the construction or renovation of the school include wiring for telecommunication services? *(Circle one.)*

Yes..... 1 No..... 2

THANK YOU!